

# LONDON- WEST MIDLANDS ENVIRONMENTAL STATEMENT

## Volume 5 | Technical Appendices

CFA23 | Balsall Common and Hampton in Arden

**Survey reports (CH-004-023)**

Cultural heritage

November 2013

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Department  
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# Appendix CH-004-023

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# 1 Introduction

## 1.1 Structure of the cultural heritage appendices

1.1.1 The cultural heritage appendices for the Balsall Common and Hampton-in-Arden area (CFA23) comprise:

- baseline reports (Appendix CH-001-023);
- a gazetteer of heritage assets (Appendix CH-002-023);
- impact assessment (Appendix CH-003-023); and
- survey reports (this appendix).

1.1.2 Maps referred to throughout the cultural heritage appendices are contained in the Volume 5 cultural heritage map book.

## 1.2 Surveys undertaken

1.2.1 This appendix contains the results of extensive archaeological surveys undertaken. Key surveys reported in this appendix include:

- LiDAR survey of the majority of the construction area;
- hyperspectral survey of the majority of the construction area;
- geophysical surveys at two locations along the route encompassing 15 hectares; and
- aerial photographic survey of the majority of the construction area.

## 2 LiDAR survey report

### 2.1 Introduction

2.1.1 This report describes the results of the interpretation of LiDAR data that was undertaken to identify potential previously undiscovered archaeological assets within the study area. The methodology is described and the significance of the results is discussed.

### 2.2 Methodology

- 2.2.1 LiDAR data was interpreted in order to identify previously unknown heritage assets that comprise an upstanding component (earthworks or ditches), and to supplement existing data for known heritage assets. The analysis was undertaken of 1m resolution Digital Elevation Model (DEM) data, using Esri ArcMAP 10.0. The data was visualised using ArcMAP’s ‘hillshade effect’ function; the height (‘z’) data was exaggerated by a factor of 20 to assist in identifying features that may exist only as slight earthworks.
- 2.2.2 Analysis was undertaken for the full extent of data available, including areas that lie outside of land required for construction; this enabled the features identified within the land required for construction to be examined within the context of the wider study area.
- 2.2.3 In order to have confidence that all notable features had been identified the data was subjected to simulated illumination. For this process the data was artificially lit from different directions and angles to highlight areas of archaeological potential. This process was undertaken as follows:
- Azimuth (direction of illumination): north, east, south, west, north-east, south-east, south-west, north-west; and
  - Altitude (angle of illumination): The data was illuminated at an angle of 45°, as this was found to be the optimum angle for identification of features. At angles less than or greater than 45°, features became increasingly less clear as the angle decreased or increased.

### 2.3 Limitations

- 2.3.1 Historic Environment Record data for non-designated heritage assets and English Heritage National Heritage List data for designated assets was up-to-date when obtained by HS2 Ltd in 2012. Any assets added to these databases, after that time, will not have been available as a reference during the course of this survey.
- 2.3.2 Where archaeological sites have been identified solely from LiDAR, without confirmation from archaeological excavation or supporting evidence such as findspots, it should be noted that the interpretation may be revised in the light of further investigation.
- 2.3.3 It should be stressed that the absence of an archaeological feature on remote sensed imagery does not confirm its absence in the ground, as visibility from the air is sometimes dependent upon a complex combination of factors. These include:
- unsuitable conditions at the time of image capture (such as lighting, ground moisture content and crops or other ground cover);

- variable quality of photography;
- underlying features being masked by alluvial build-up; and
- areas where archaeological features either do not survive or have never existed.

### 2.4 Assumptions

2.4.1 No assumptions are noted for the data or survey methods for this study area.

### 2.5 Results

2.5.1 Interpretation of LiDAR data successfully identified 43 areas of interest within the study area. The sites are listed in Table 1.

Table 1: LiDAR survey - identified areas of interest from LiDAR interpretation

Unique identifier	Description	Feature number	Geographical location	NGR (site centred)
BHA260	Ridge and furrow	L52	North of Diddington Hall	E421344, N282558
BHA256	Ridge and furrow	L55	West of Diddington Hall	E421431, N282416
BHA255	Ridge and furrow	L56	South of Diddington Hall	E421483, N282393
BHA252	Ridge and furrow	L57	South of Diddington Hall	E421590, N282386
BHA265	Ridge and furrow	L58	South-west of Diddington Hall	E421183, N282107
BHA187	Ridge and furrow	L59	West of Diddington Land, south of Shadow Brook	E420634, N282170
BHA177	Headland	L60	West of Diddington Land, south of Shadow Brook	E420867, N282150
BHA217	Headland	L61	West of Diddington Lane	E420896, N281937
BHA093	Headland	L62	West of Diddington Lane, north of Hampton-in-Arden	E421009, N281859
BHA196	Possible clay pit	L63	West of Diddington Lane	E420729, N281972
BHA213	Ridge and furrow	L64	East of railway, north of Hampton-in-Arden	E420513, N281740
BHA125	Ridge and furrow	L65	North of Hampton-in-Arden	E420576, N281588
BHA097	Ridge and furrow	L66	North of Hampton-in-Arden	E420825, N281656
BHA261	Headland	L67	West of Mouldings Green Farm	E421623, N281906
BHA247	Ridge and furrow	L68	West of Mouldings Green Farm	E421791, N281891
BHA245	Ridge and furrow	L69	South of Meriden Mill Farm	E422162, N281769
BHA249	Ridge and furrow	L70	North of Meriden Road	E421920, N281579
BHA246	Ridge and furrow	L71	South of Meriden Road	E422087, N281609
BHA250	Ridge and furrow	L72	South of Meriden Road	E421964, N281362
BHA254	Ridge and furrow	L73	South of Meriden Road	E421875, N281294
BHA171	Ridge and furrow	L74	Centre of Hampton-in-Arden	E420710, N281294
BHA244	Ridge and furrow	L75	North of Gravel Pit Plantation	E422556, N281583

Unique identifier	Description	Feature number	Geographical location	NGR (site centred)
BHA262	Ridge and furrow	L76	South of Patrick Farm	E421652, N281190
BHA172	Ridge and furrow/trackway	L77	South of Patrick Farm	E421634, N280825
BHA263	Ridge and furrow	L78	South of Patrick Farm, north of sand pit	E421801, N280867
BHA259	Ridge and furrow	L79	North of Marsh Farm	E422297, N280267
BHA251	Moat	L80	North-east of Marsh Farm	E422505, N280177
BHA259	Ridge and furrow, platforms	L81	North of Marsh Farm	E422300, N279992
BHA248	Ridge and furrow	L82	North-east of Marsh Farm	E422613, N279918
BHA253	Ridge and furrow	L83	East of Marsh Farm	E422512, N279715
BHA257	Linear feature	L84	East of Marsh Farm	E422493, N279729
BHA240	Ridge and furrow	L85	Between Lavender Hall and Ram Hall	E424543, N278075
BHA243	Ridge and furrow	L86	North of Berkswell Station	E424422, N277773
BHA241	Ridge and furrow	L87	North-east of Berkswell Station	E424543, N277681
BHA238	Ridge and furrow	L88	North of Truggist Lane	E424774, N277723
BHA237	Ridge and furrow	L89	North of Truggist Lane	E424839, N277724
BHA239	Ridge and furrow	L90	South of Truggist Lane	E424797, N277520
BHA242	Ridge and furrow	L91	West of Sunnyside Farm	E424856, N277120
BHA235	Ridge and furrow	L92	South of Truggist Lane	E425055, N277468
BHA236	Ridge and furrow	L93	West of Beechwood Farm	E425267, N277182
BHA233	Ridge and furrow	L94	South of Beechwood Farm	E425641, N277223
BHA234	Ridge and furrow	L95	East of Beechwood Farm	E425518, N276950
BHA264	Headland	L96	South of Patrick Farm	E421702, N281053



2.6 Description

2.6.1 Ridge and furrow features heavily within the LiDAR results with the associated features of headlands indicating where the plough has turned also identified. The extent of this feature type throughout the study area confirms the rural and agricultural nature of the landscape. The extensive survival of this feature and subsequent identification through LiDAR shows that the historic landscape is well preserved within the study area with little modern disturbance or intrusive agricultural techniques which could have removed the traces of this. The location of a possible moat (L8o) to the north east of Marsh Farm also helps demonstrate the preservation of this historic landscape and adds to the evidence base for this asset type which is abundant in the former Forest of Arden area.

2.7 Interpretation

- 2.7.1 The predominant feature type identified by the LiDAR interpretation is ridge and furrow, with 35 areas noted within the study area.
- 2.7.2 L81 is an area of particular interest. Located to the north of Marsh Farm, this area contains ridge and furrow that appears to sit within an area of platforms; this may indicate an earlier use of this site, such as a small settlement, however it is not possible to determine the relationship of these features through LiDAR interpretation.
- 2.7.3 Five headlands (banks representing former field boundaries) were also identified by the analysis. The headlands were identified within fields that were under crop at the time that the LiDAR data was collected and therefore it is not possible to determine whether remnants of ploughed-out ridge and furrow survive beneath the crop in the vicinity of these features.
- 2.7.4 L8o is the site of a medieval moat that is listed on the HER; however the LiDAR has identified areas of ridge and furrow adjacent to it that enables the local context of the asset to be understood more clearly. The proximity of L8o to theL81 is of interest, as it is common for moated sites to be related to small settlements in the vicinity.
- 2.7.5 A linear feature (L84) was noted to the south of L8o; however it is unclear whether this was a former track, headland, or possible modern feature.
- 2.7.6 All the features identified by the LiDAR interpretation are considered to be of local significance.

2.8 Conclusion

2.8.1 The LiDAR analysis was successful in identifying archaeological features that were previously unknown, as well as providing clarity on known sites, such as L81, listed on the HER as ridge and furrow, but which appears to possibly be a number of platforms overlaid by ridge and furrow. It is interesting to note that the prevalent feature type identified was ridge and furrow. While this feature type is well documented within the West Midlands, and some areas shown on the LiDAR concur with known sites, the majority of surviving ridge and furrow identified by the LiDAR are previously unknown.

2.9 Figures

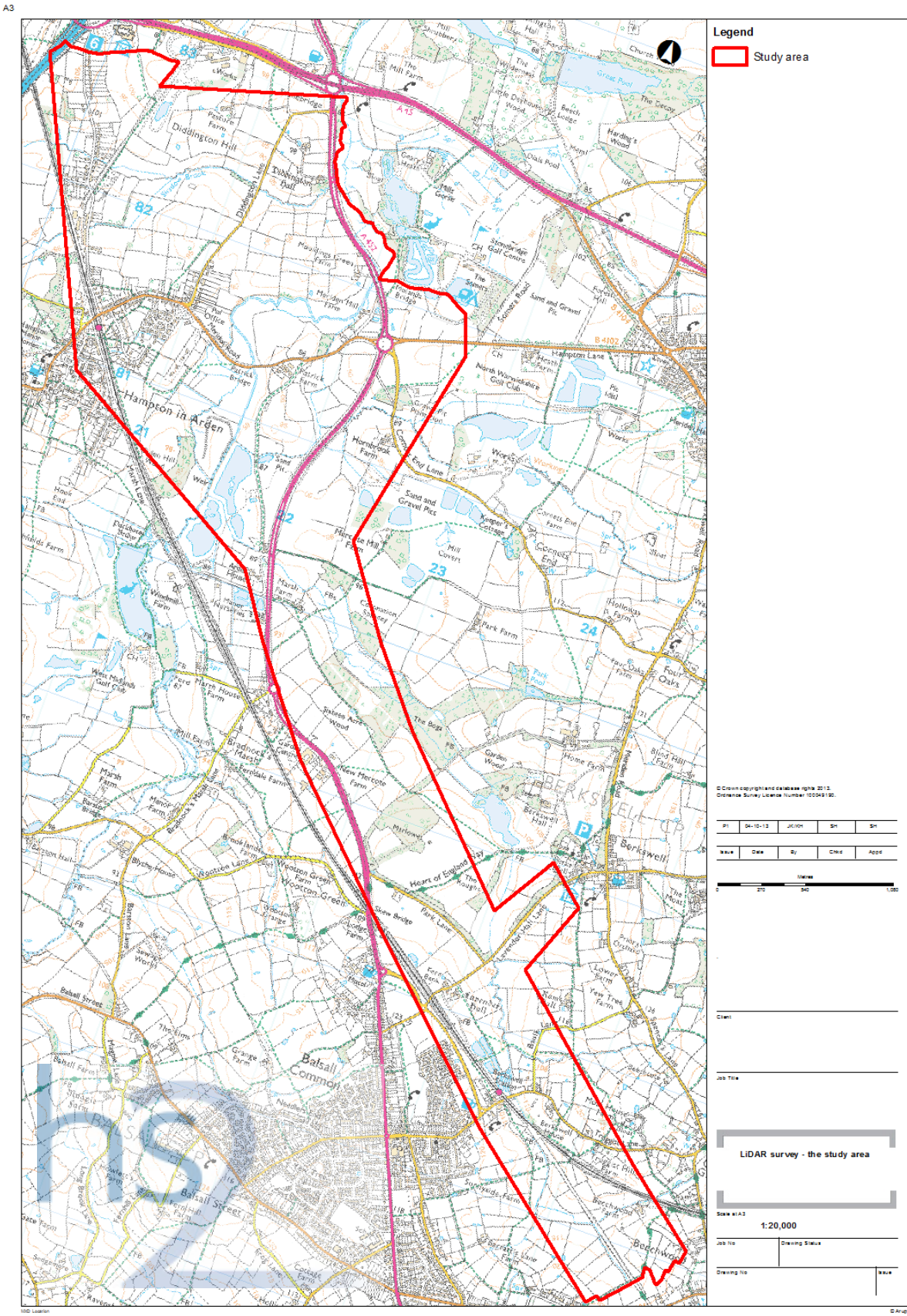


Figure 1: LiDAR survey - the study area



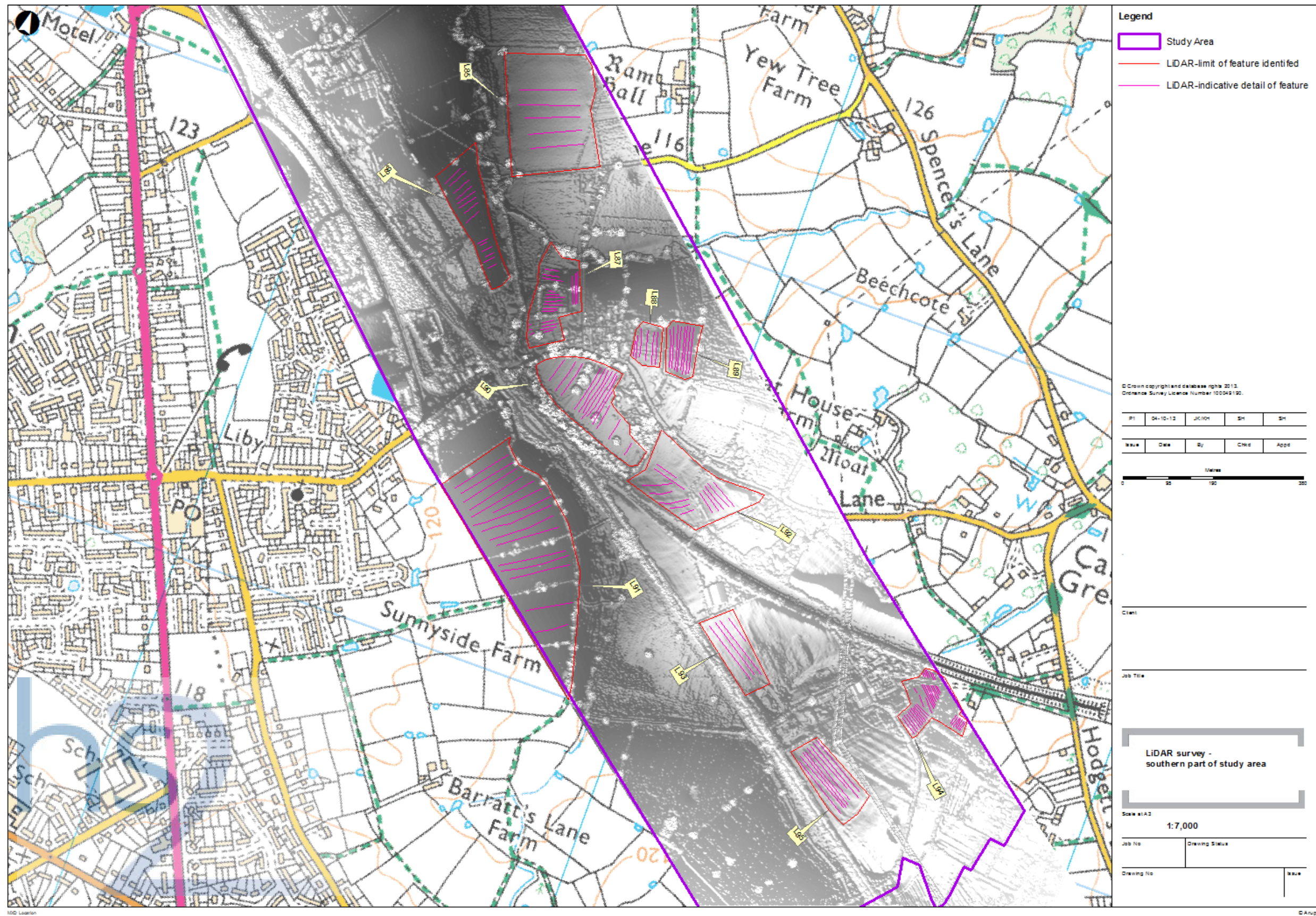




Figure 2: LiDAR survey - southern part of study area

A3

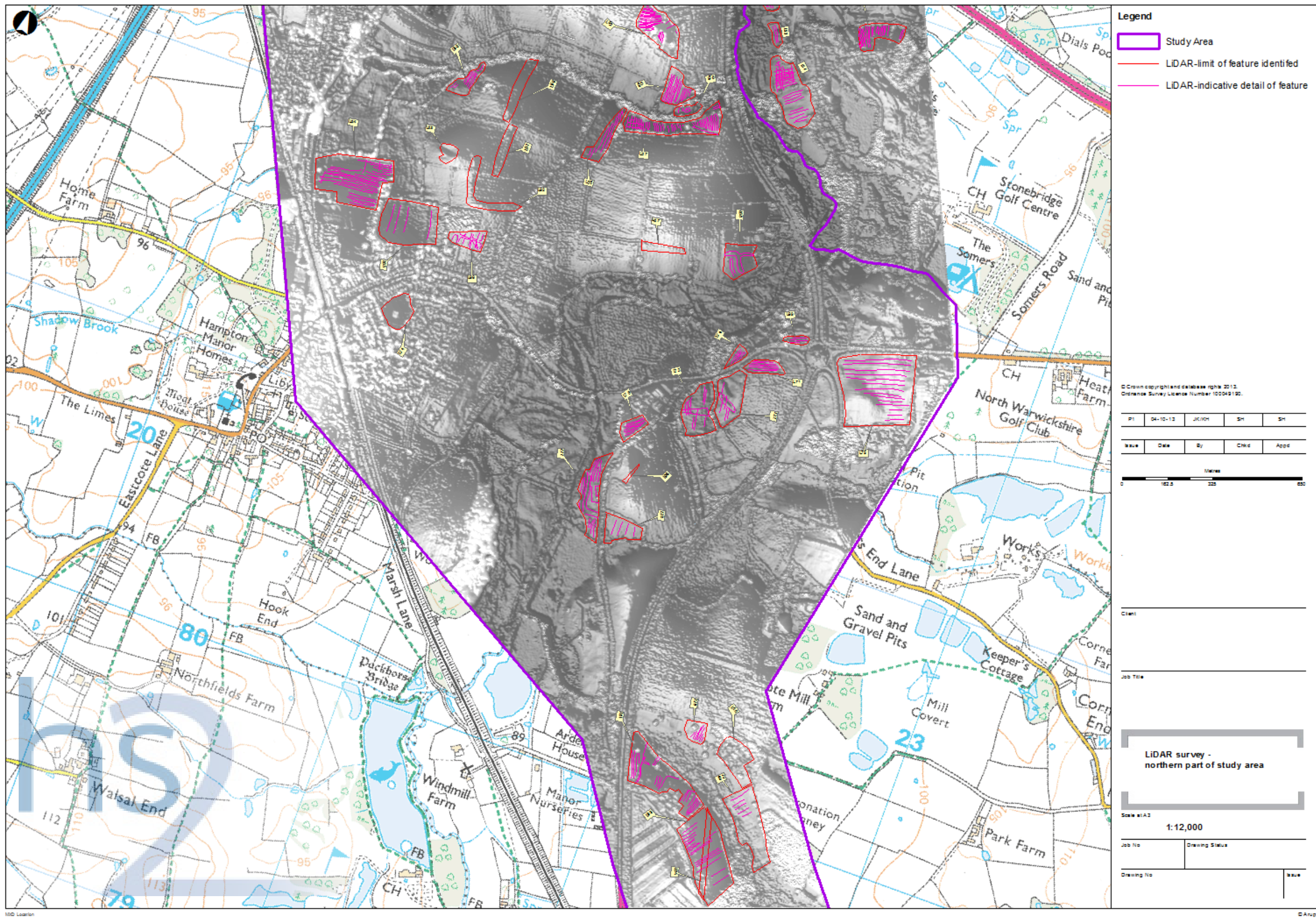


Figure 3: LiDAR survey - northern part of study area



### 3 Hyperspectral survey report

#### 3.1 Introduction

3.1.1 This report describes the results of the interpretation of hyperspectral data that was undertaken to identify potential previously undiscovered archaeological assets within the study area. The methodology is described and the significance of the results is discussed.

#### 3.2 Methodology

3.2.1 There is no standard methodology for assessing hyperspectral data. Data is acquired at a number of wavelengths, each of which has the potential to show the presence of buried archaeological remains. The technique relies on soils within archaeological features reflecting different wavelengths of light from the surrounding soil, however there is no way to determine the most effective wavelength without reviewing all available wavelengths, as all geologies possess different qualities.

3.2.2 The data received was divided into 34 'bands' with wavelengths ranging from 406.48 nm to 992.59 nm. The entire study area was reviewed for each of the 34 bands using ArcGIS 10, and where possible archaeological features were identified the outlines of these were marked as polygons as an ArcGIS shapefile.

#### 3.3 Limitations

3.3.1 Historic Environment Record data for non-designated heritage assets and English Heritage National Heritage List data for designated assets was up-to-date when obtained by HS2 Ltd in 2012. Any assets added to these databases, after that time, will not have been available as a reference during the course of this survey.

3.3.2 Where archaeological sites have been identified solely from the review of hyperspectral data, without confirmation from archaeological excavation or supporting evidence such as findspots, it should be noted that the interpretation may be revised in the light of further investigation.

3.3.3 It should be stressed that the absence of an archaeological feature on remote sensed imagery does not confirm its absence in the ground, as visibility from the air is sometimes dependent upon a complex combination of factors. These include:

- unsuitable conditions at the time of image capture (such as lighting, ground moisture content and crops or other ground cover);
- variable quality of photography;
- underlying features being masked by alluvial build-up; and
- areas where archaeological features either do not survive or have never existed.

#### 3.4 Assumptions

3.4.1 No assumptions are noted for the data or survey methods for this study area.

#### 3.5 Results

3.5.1 The review of hyperspectral data within this study area identified no potential archaeological features that were not known of previously. It is likely that the agricultural nature and geology of the area contributed to this lack of results.

#### 3.6 Description

3.6.1 The survey technique employed was unsuccessful in identifying archaeological assets. This appears to have been a result of the agricultural nature and geology of the area.

#### 3.7 Interpretation

3.7.1 Due to no archaeological assets being identified, interpretation was not undertaken.

#### 3.8 Conclusion

3.8.1 The review of the hyperspectral data was not able to identify any potential archaeological features within the study area. It is likely that this is due to the agricultural nature and geology of the area.

## 4 Geophysical survey report

### 4.1 Introduction

- 4.1.1 Geophysical survey was conducted over two predefined areas at Berkswell Estate (NGR SP233787) and Lavender Hall (NGR SP238783). The aim of the survey was to locate and characterise any anomalies of possible archaeological interest within the study areas.
- 4.1.2 The Lavender and Berkswell survey areas lie between the A452 to the west and Lavender Hall Lane to the east, in the parish of Berkswell, Solihull district. Berkswell encompasses two relatively flat fields to the north of Park Lane; the westernmost was overgrown long grass within a wooded area and largely unsurveyable, whilst the larger eastern field was under young crop. The Lavender site occupies two fields south of Park Lane, both under young crop; the topography is flat.
- 4.1.3 Both sites lie on a bedrock of Mercia Mudstone with superficial glaciofluvial deposits of sand and gravel from the mid-Pleistocene era over much of the site but also Diamicton till of the same era over the south-eastern half of Berkswell and north-west end of Lavender Hall<sup>1</sup>. The soils in the area are classified as coarse loamy deposits of the Arrow (543) association, fine loamy and clayey deposits of the Salop (711m) association and coarse loamy over clayey soils of the Rufford (7110) association<sup>2</sup>.
- 4.1.4 There was no known archaeology prior to the survey aside from the Berkswell site being a part of the historic Berkswell Estate<sup>3</sup>.

### 4.2 Methodology

- 4.2.1 All survey grid positioning was carried out using Trimble R8 Real Time Kinematic (RTK) VRSNow equipment. The geophysical survey areas are georeferenced relative to the Ordnance Survey National Grid by tying in to local detail and corrected to the mapping provided by the client. These tie-ins are presented in Figure 16. Please refer to this diagram when re-establishing the grid or positioning trenches.
- 4.2.2 The magnetometer survey was carried out with Bartington Grad 601-2 fluxgate gradiometers, collecting data every 0.25m along traverses 1m apart. Data processing has been performed as appropriate using an in-house software package (GeoSuB) employing the following processing steps: zero mean traverse, step correction (de-stagger) and interpolation (on the Y axis). All survey work is carried out in accordance with the current English Heritage guidelines<sup>4</sup>.
- 4.2.3 Data are presented as greyscale and XY trace plots. The former enables simple feature identification and basic interpretation whilst the latter allows for analysis of the shape of the individual anomalies in order to better characterise the recorded responses.

### 4.3 Limitations

- 4.3.1 Magnetic survey is an exceedingly effective technique for site evaluation providing fast data acquisition and responding, to some degree, to the majority of archaeological site-types. The technique relies upon enhancement of naturally occurring iron-bearing compounds in the soil through anthropogenic activity. Detection rates can be poor where archaeological sites have only seen temporary and/or sporadic occupation or where there is insufficient activity to drive the enhancement; this is often true of lithic-era sites. Success may also be limited over soils that are deficient in iron compounds, providing little material to be subject to enhancement. Conversely, the strength of response from soils and geological units which are naturally magnetic, for example igneous formations and soils derived thereof, may mask any subtler archaeological enhancement within.
- 4.3.2 The presence of ferrous structures either above or below ground (buildings, pylons, fences, pipes etc.) will produce very strong magnetic fields which will extend far beyond their physical footprint. The strength of these magnetic 'shadows' is such that they will mask practically any archaeological anomalies. Similarly, later features and demolition spreads or imported consolidation material can produce areas of magnetic disturbance that will mask underlying features.
- 4.3.3 As a general rule, the Bartington Grad601 instruments allow for a depth of investigation of approximately 1m, depending on the strength of the field produced by the buried feature; below this depth only particularly enhanced material will be detected with any kind of confidence.
- 4.3.4 Very little survey was possible through the overgrown grass in the western field at Berkswell, and the tree-lined boundary between Areas 1 and 2 also prevented survey. Some minor positional errors will have been introduced during data collection. These have been corrected for at the processing stage and not had a detrimental effect on the overall data quality.

### 4.4 Assumptions

- 4.4.1 All of the fields contain small-scale ferrous anomalies, most clearly represented by sharp 'spikes' in the XY trace plots, and are typically assumed to be modern debris within the topsoil unless the site type or a priori knowledge suggests otherwise.

### 4.5 Results

#### Description

##### *Berkswell*

- 4.5.1 Area 1 at Berkswell has revealed very few anomalies aside from some isolated small ferrous responses. Area 2 has a ferrous linear anomaly (with an alternating positive / negative response) crossing it approximately west-east. There are more isolated small-scale ferrous anomalies right across the survey area and some very faint trends.

##### *Lavender Hall*

- 4.5.2 Surveys in both fields at the Lavender Hall site are dominated by magnetic disturbance.

<sup>1</sup> BGS 2013; British Geological Survey; Geology of Britain Viewer; 1:50,000 scale geology; centred on 423563, 278597; <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>; accessed 10/07/2013.

<sup>2</sup> Soil Survey of England and Wales (SSEW), (1983), *Soils of England and Wales: Sheet 3 Midland and Western England*. Soil Survey of England and Wales, Harpenden

<sup>3</sup> Arup, pers. comm

<sup>4</sup> English Heritage, (2008), *Geophysical Survey in Archaeological Field Evaluation*.

## 4.6 Interpretation

### Berkswell

- 4.6.1 No responses that could be interpreted as originating from archaeological features have been recorded. The linear ferrous response is characteristic of a metal pipe, there are some ferrous anomalies associated with the southern boundary fence and a tank on the eastern boundary.

### Lavender Hall

- 4.6.2 Any potential archaeological responses will have been masked by the strong magnetic disturbance recorded across the whole Lavender Hall site. This 'blanket' of ferrous responses would suggest that material has been imported and spread across these fields; the origin and purpose of this importation remains uncertain.

## 4.7 Conclusion

- 4.7.1 No anomalies of clear archaeological interest were detected. A pipe was identified in Area 2, and both areas in the Lavender Hall site were dominated by magnetic disturbance which will have masked any weaker responses.

## 4.8 References

- 4.8.1 BGS 2013; British Geological Survey; Geology of Britain Viewer; 1:50,000 scale geology; centred on 415540,290757; <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>; accessed 10/07/2013
- 4.8.2 English Heritage, (2008), Geophysical Survey in Archaeological Field Evaluation.
- 4.8.3 Soil Survey of England and Wales (SSEW), (1983), *Soils of England and Wales: Sheet 3 Midland and Western England*. Soil Survey of England and Wales, Harpenden.

## 4.9 Figures



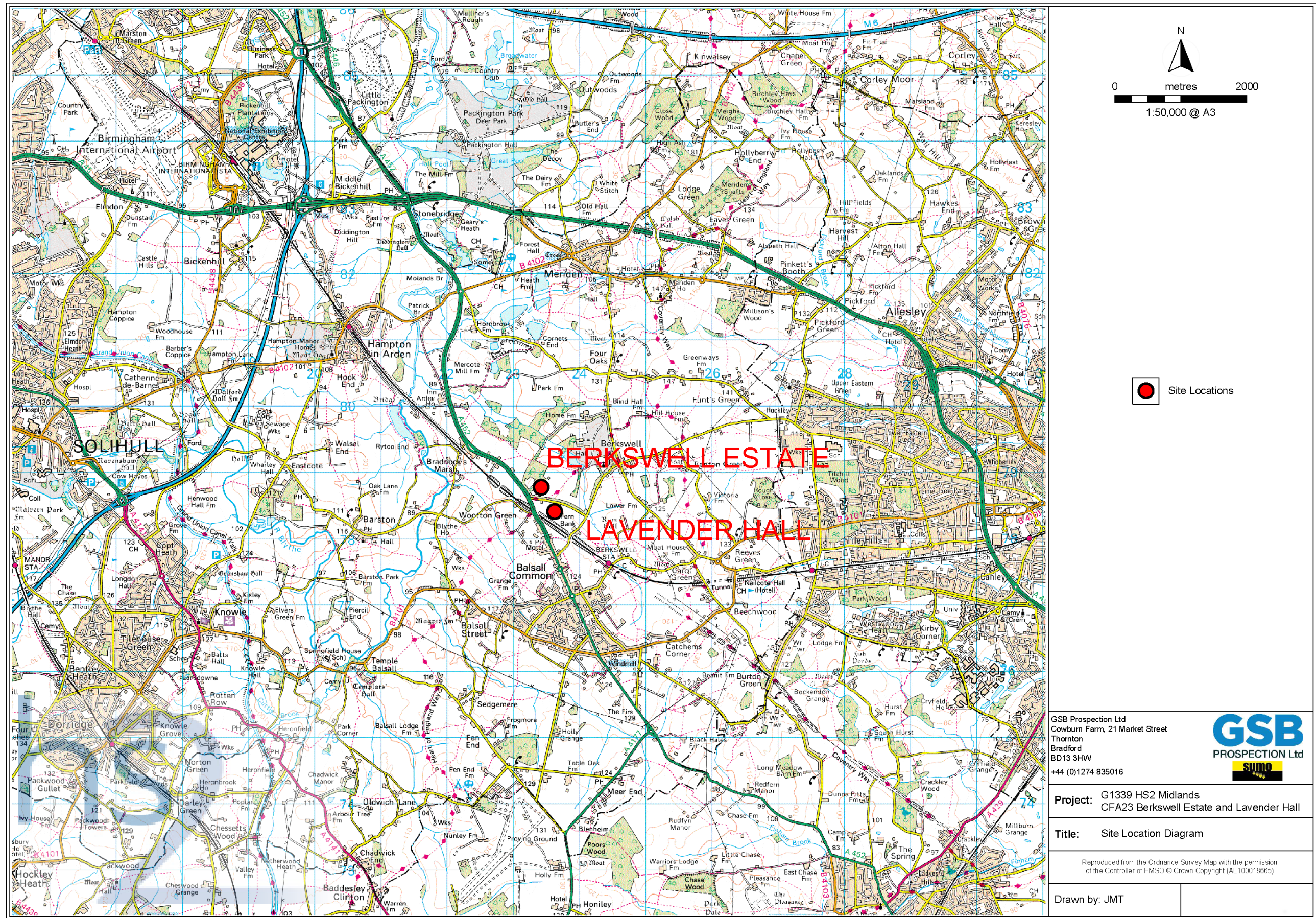


Figure 4: Geophysical survey - site location



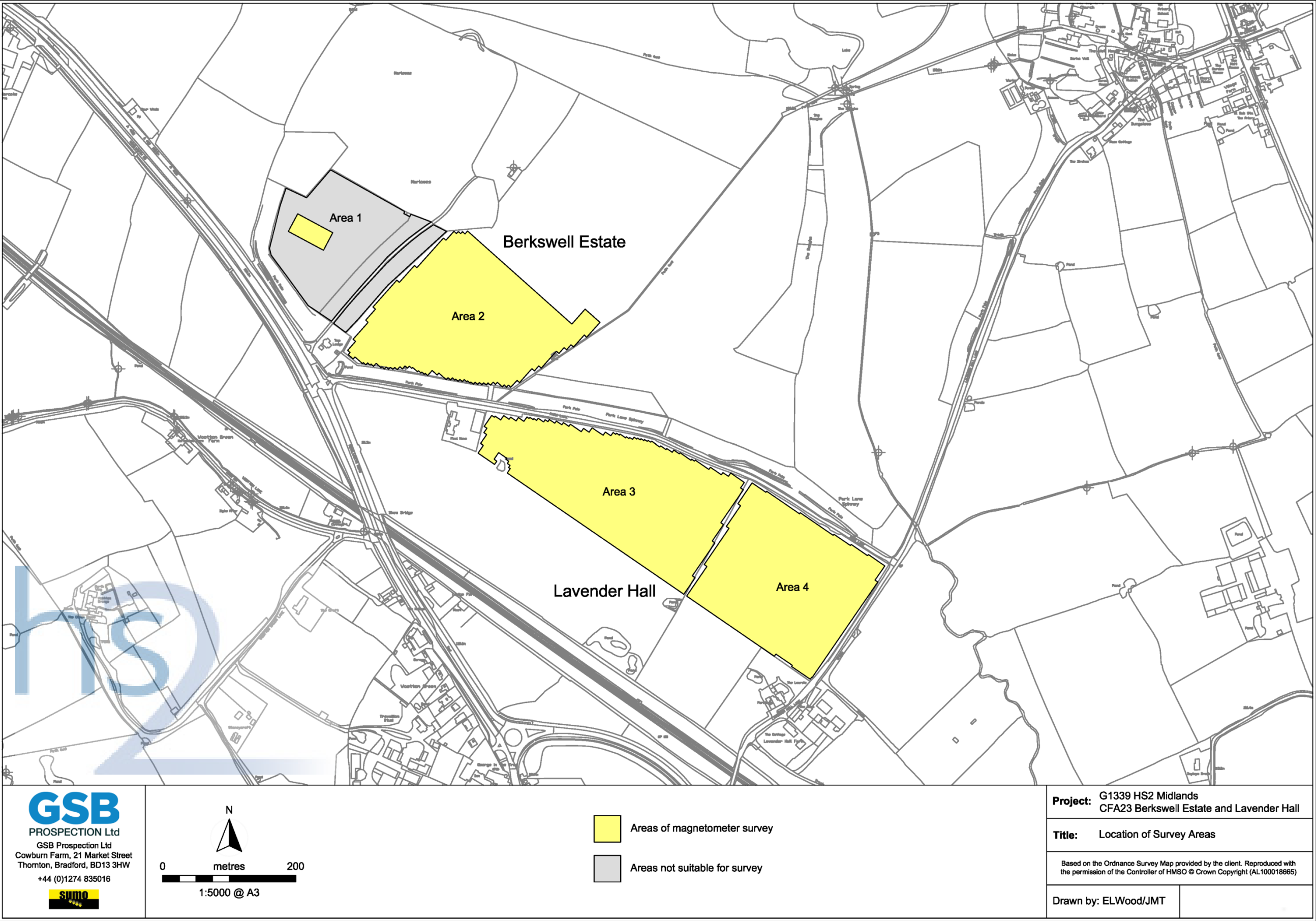


Figure 5: Geophysical survey - location of survey areas



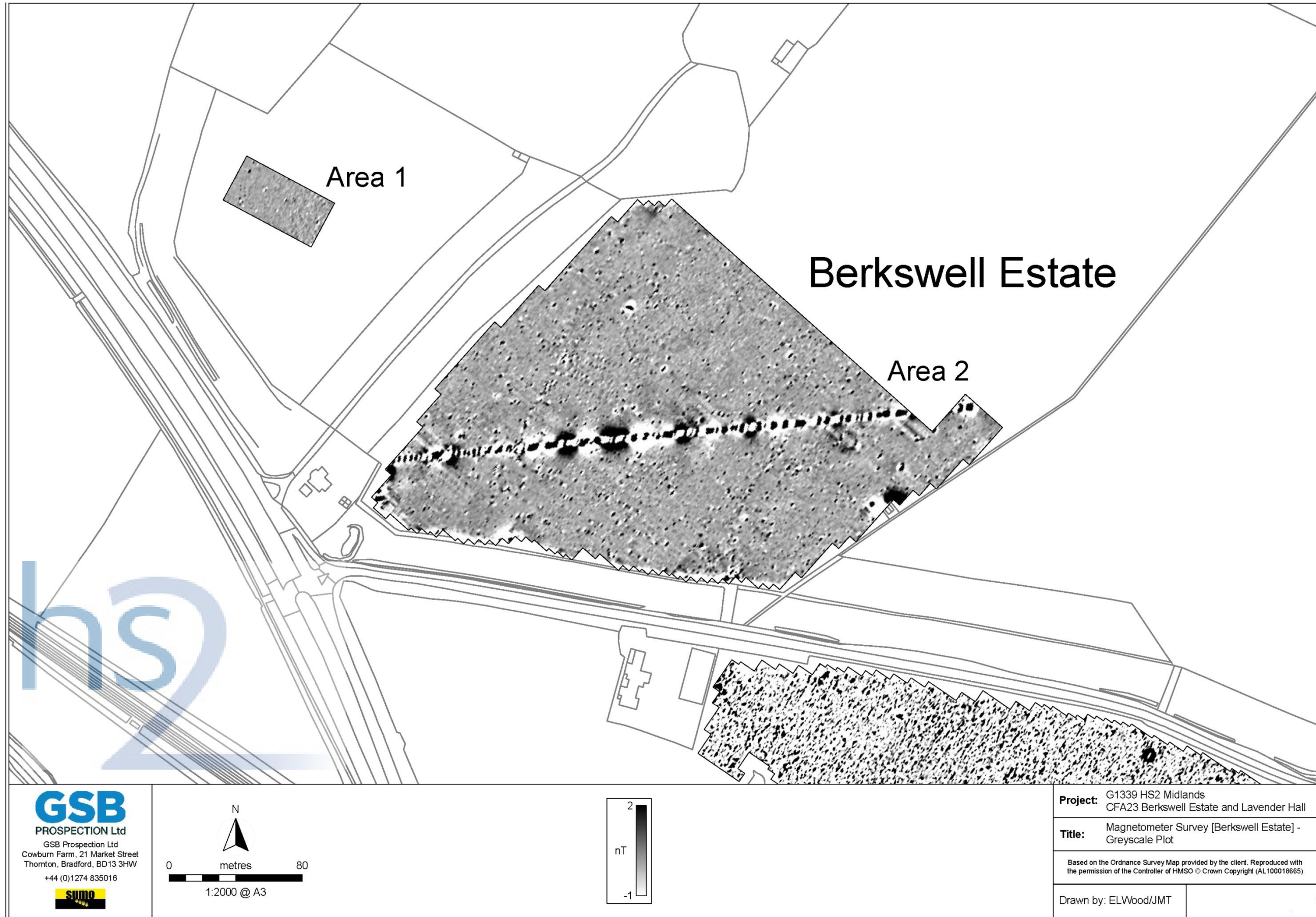


Figure 6: Geophysical survey - greyscale plot - Berkswell Estate



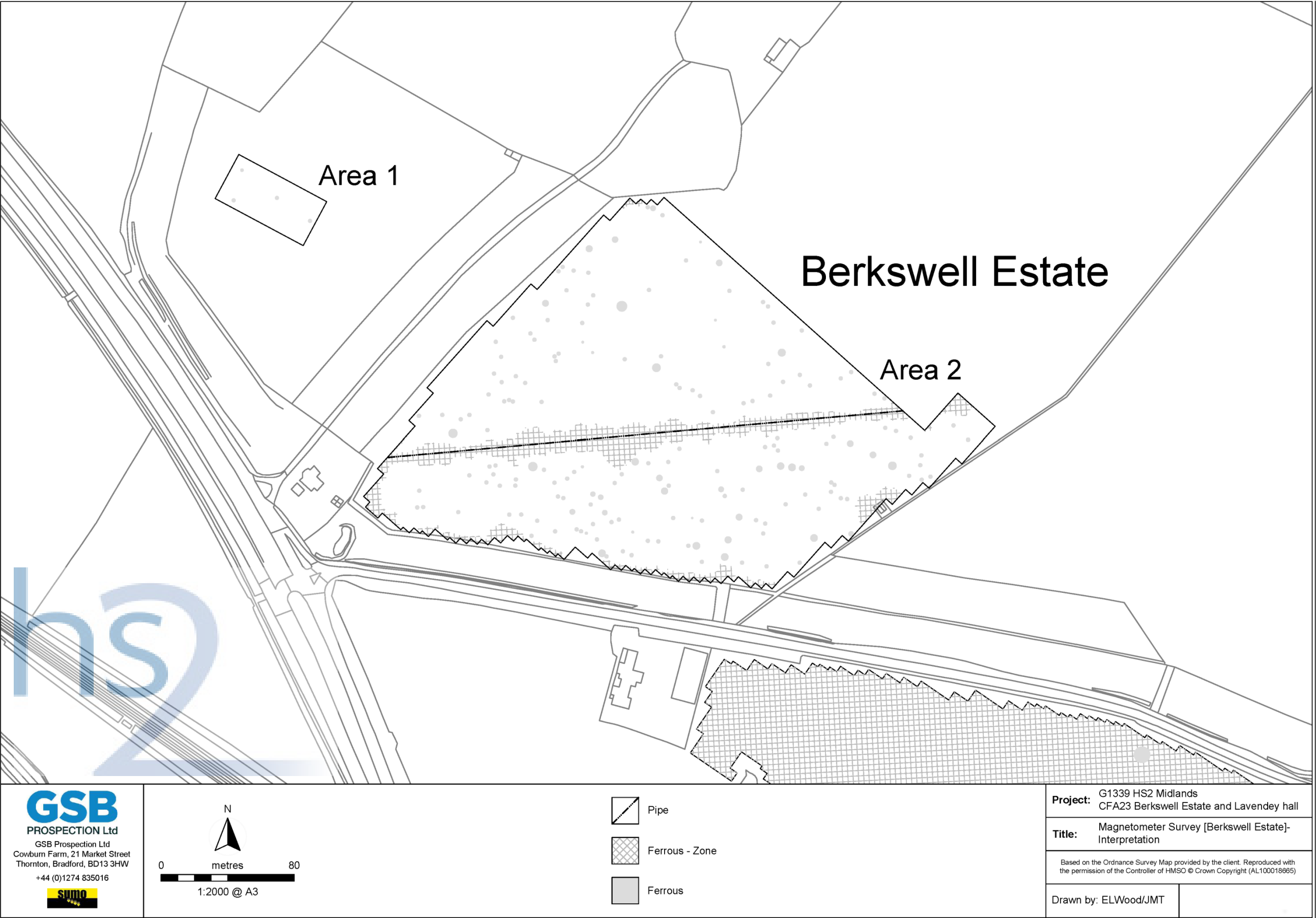


Figure 7: Geophysical survey - interpretation - Berkswell Estate



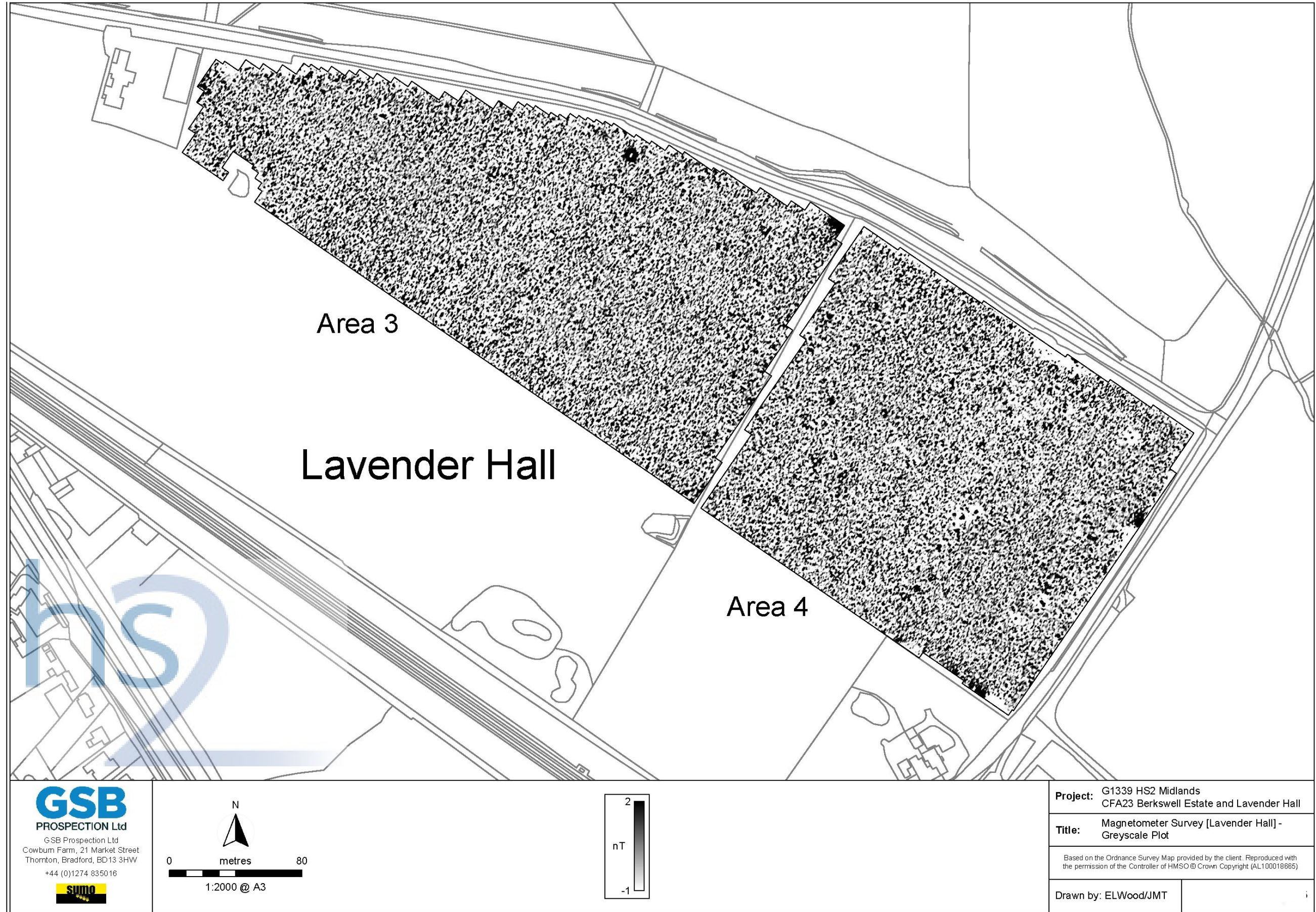


Figure 8: Geophysical survey - greyscale plot - Lavender Hall



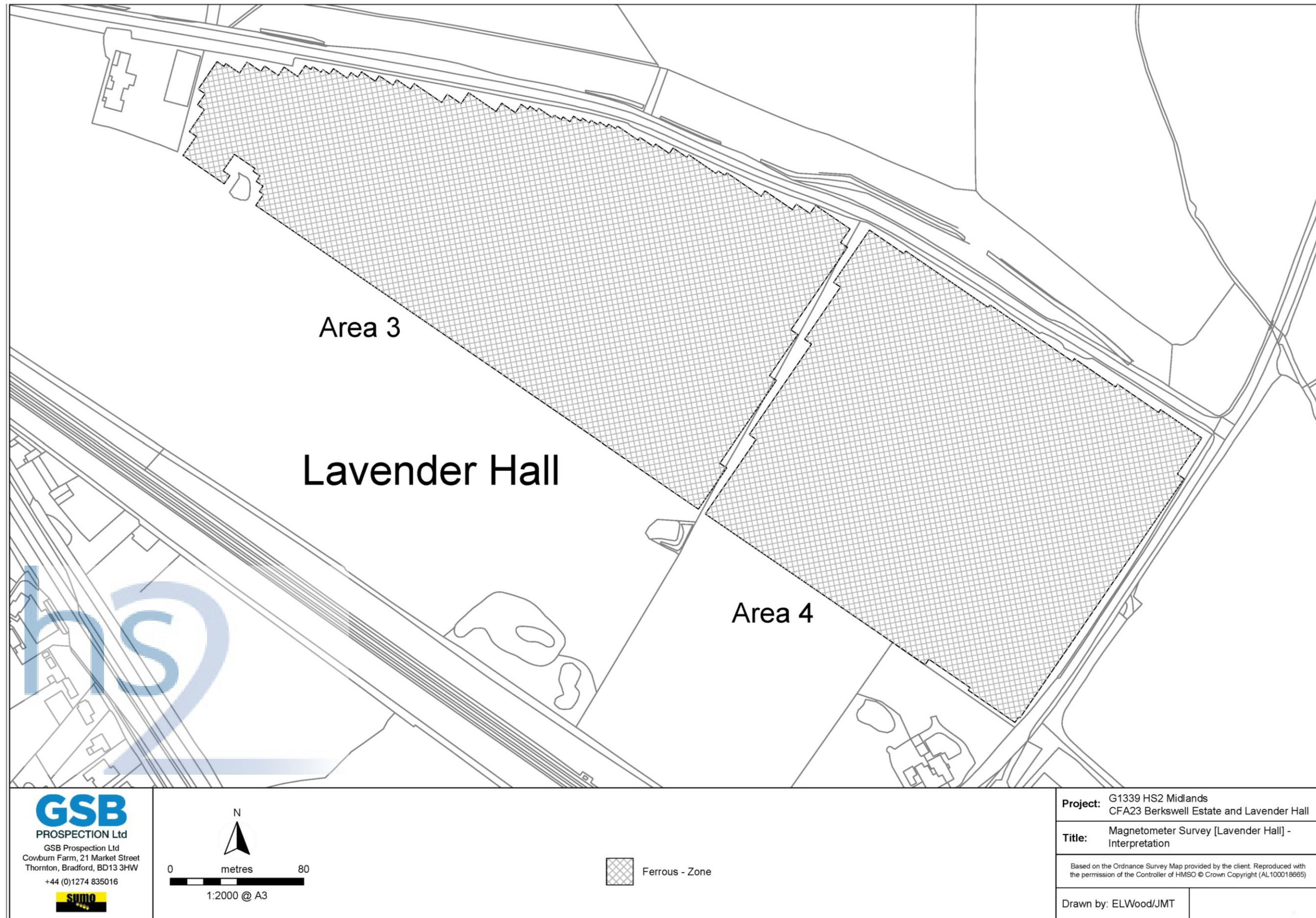


Figure 9: Geophysical survey - interpretation - Lavender Hall



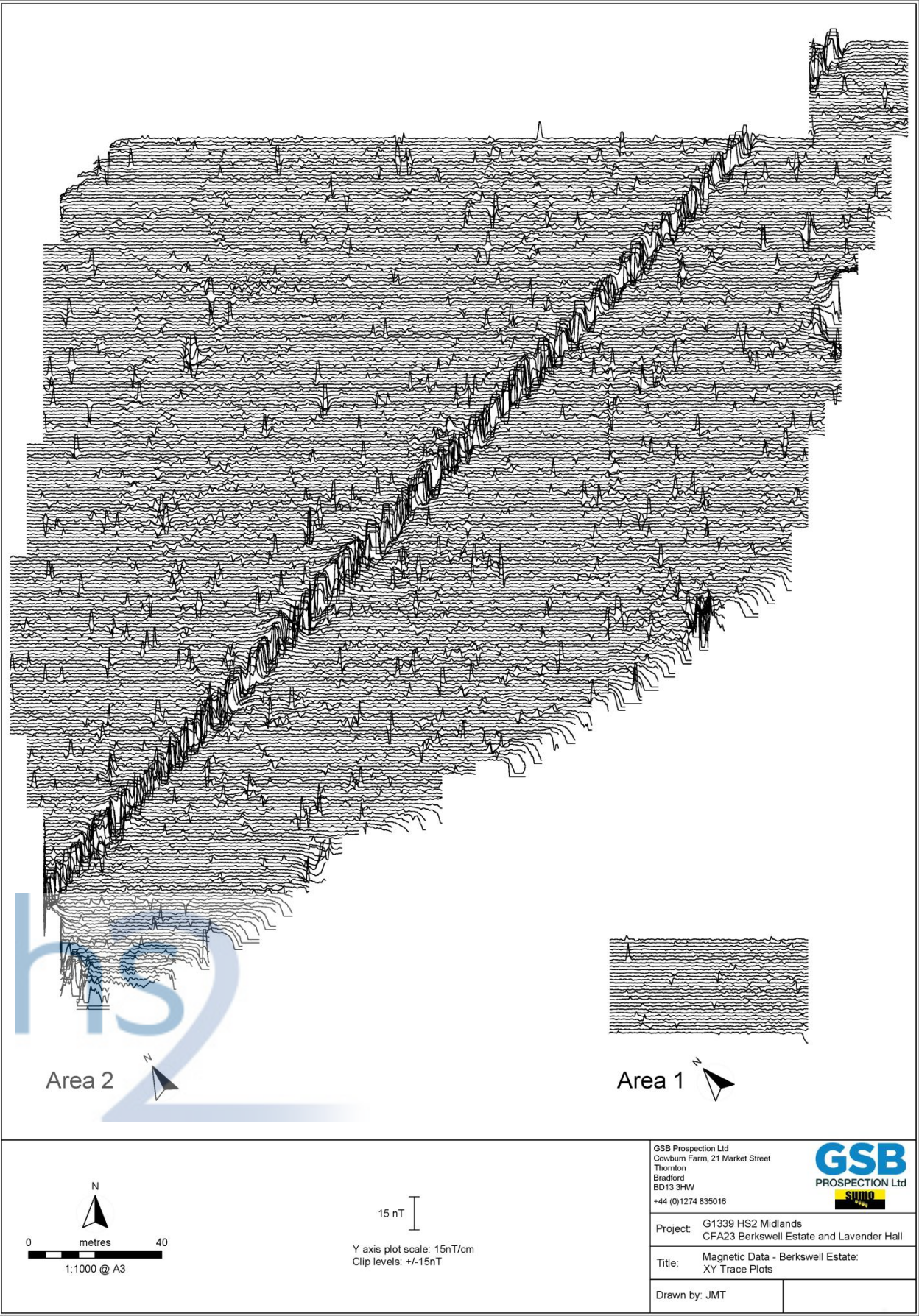


Figure 10: Geophysical survey - magnetic data - Berkswell Estate, XY trace plot

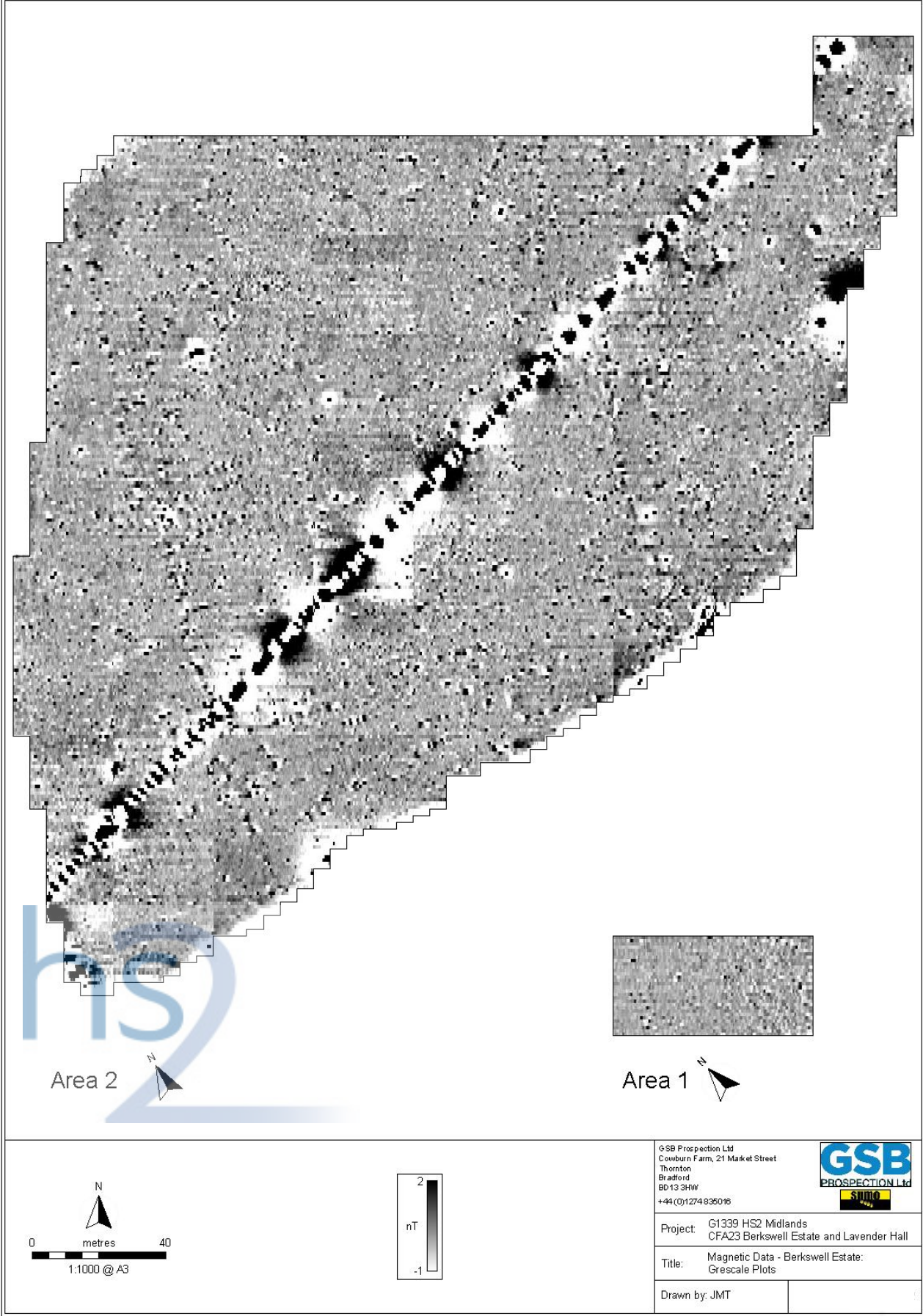


Figure 11: Geophysical survey - magnetic data - Berkswell Estate, greyscale plots



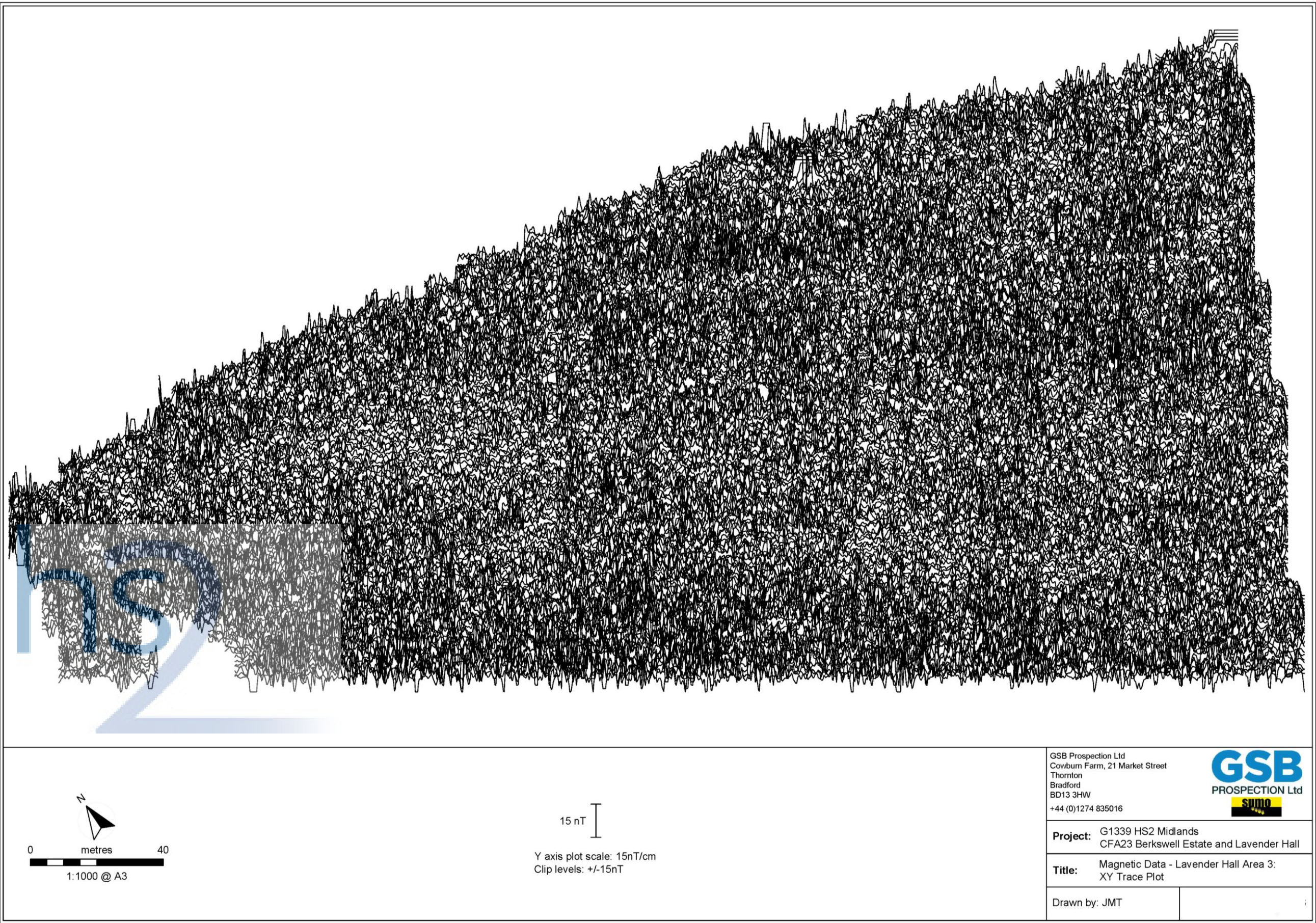


Figure 12: Geophysical survey - magnetic data - Lavender Hall area 3, XY trace plot



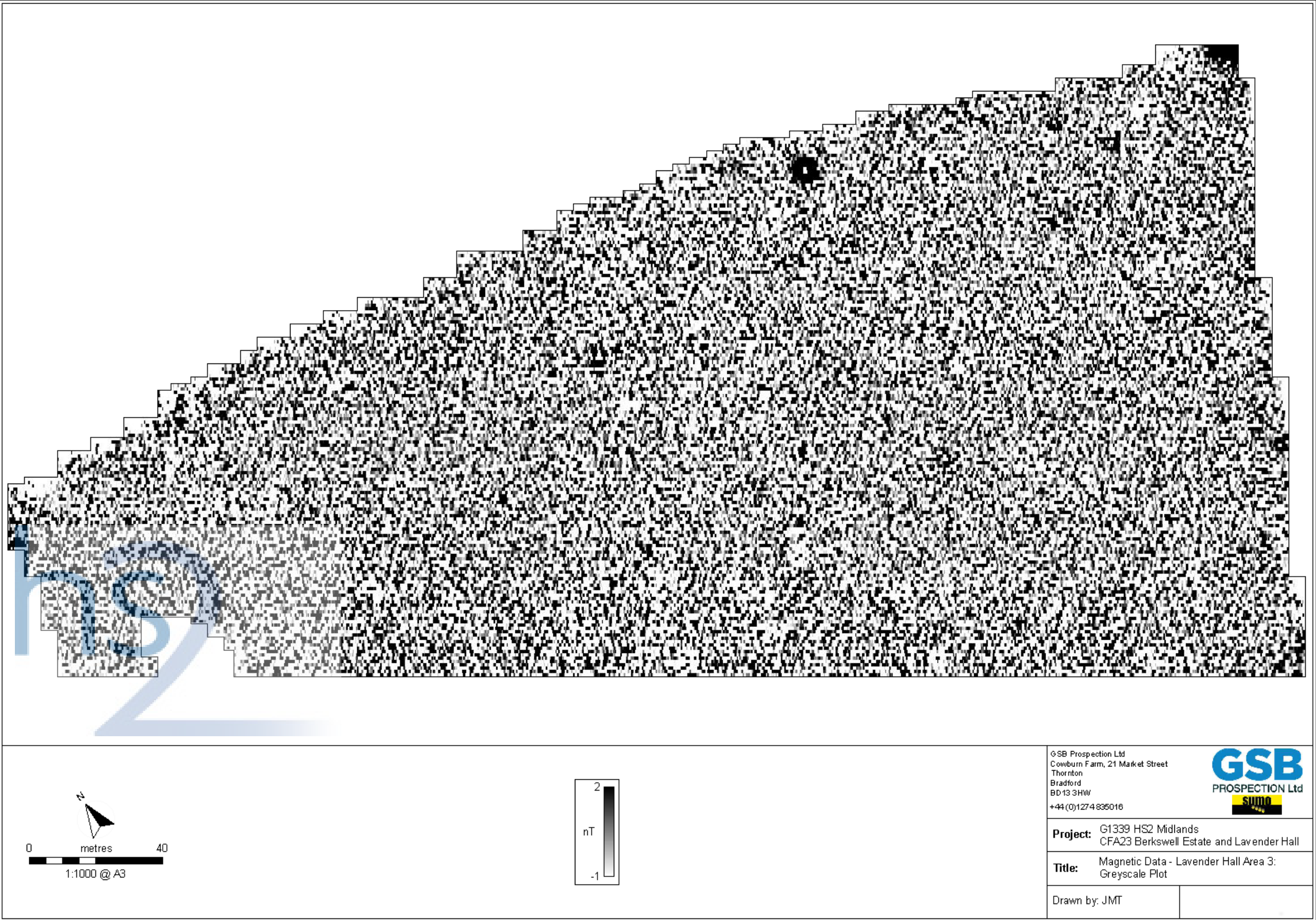


Figure 13: Geophysical survey - magnetic data - Lavender Hall area 3, greyscale plot



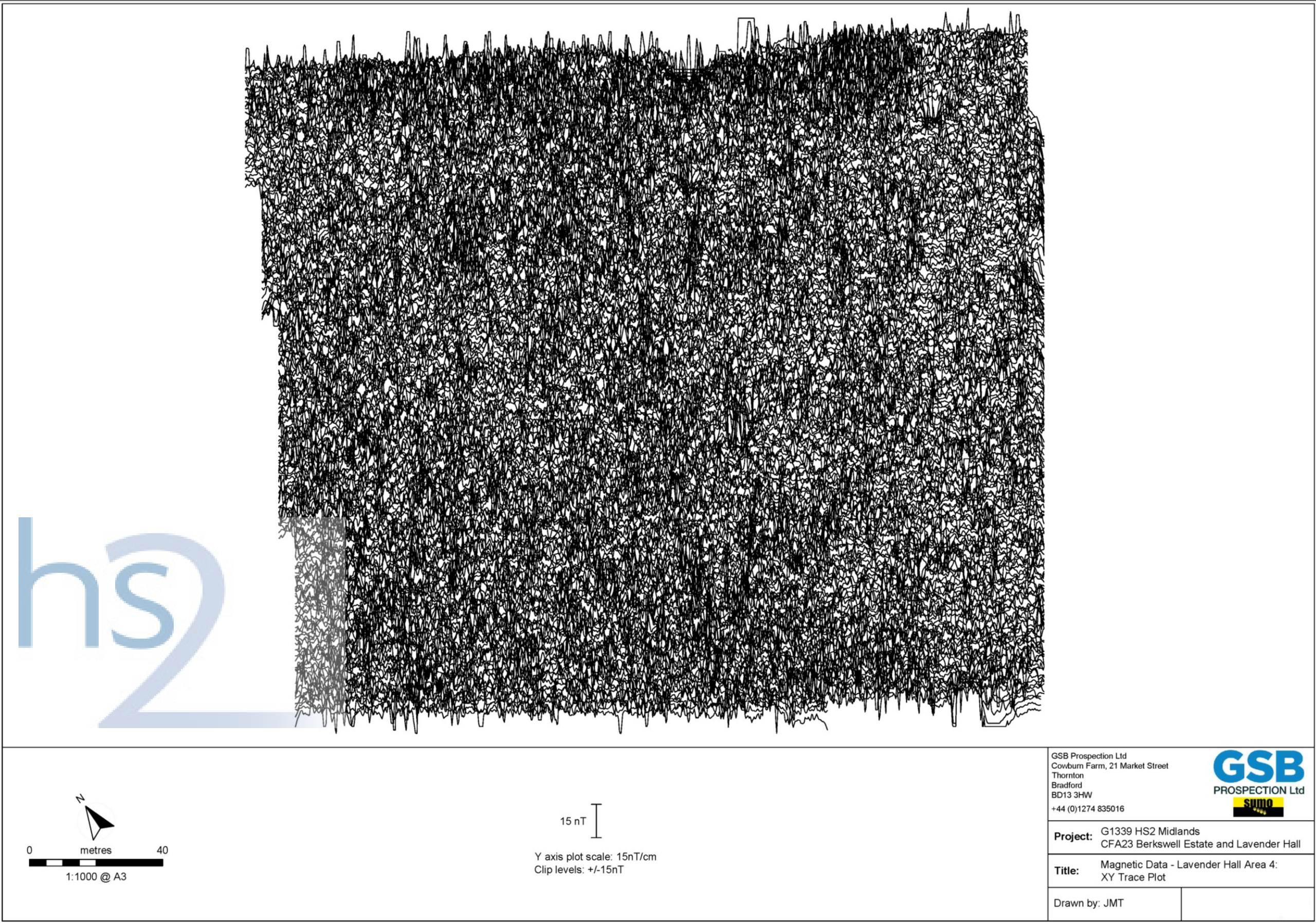


Figure 14: Geophysical survey - magnetic data - Lavender Hall area 4, XY trace plot



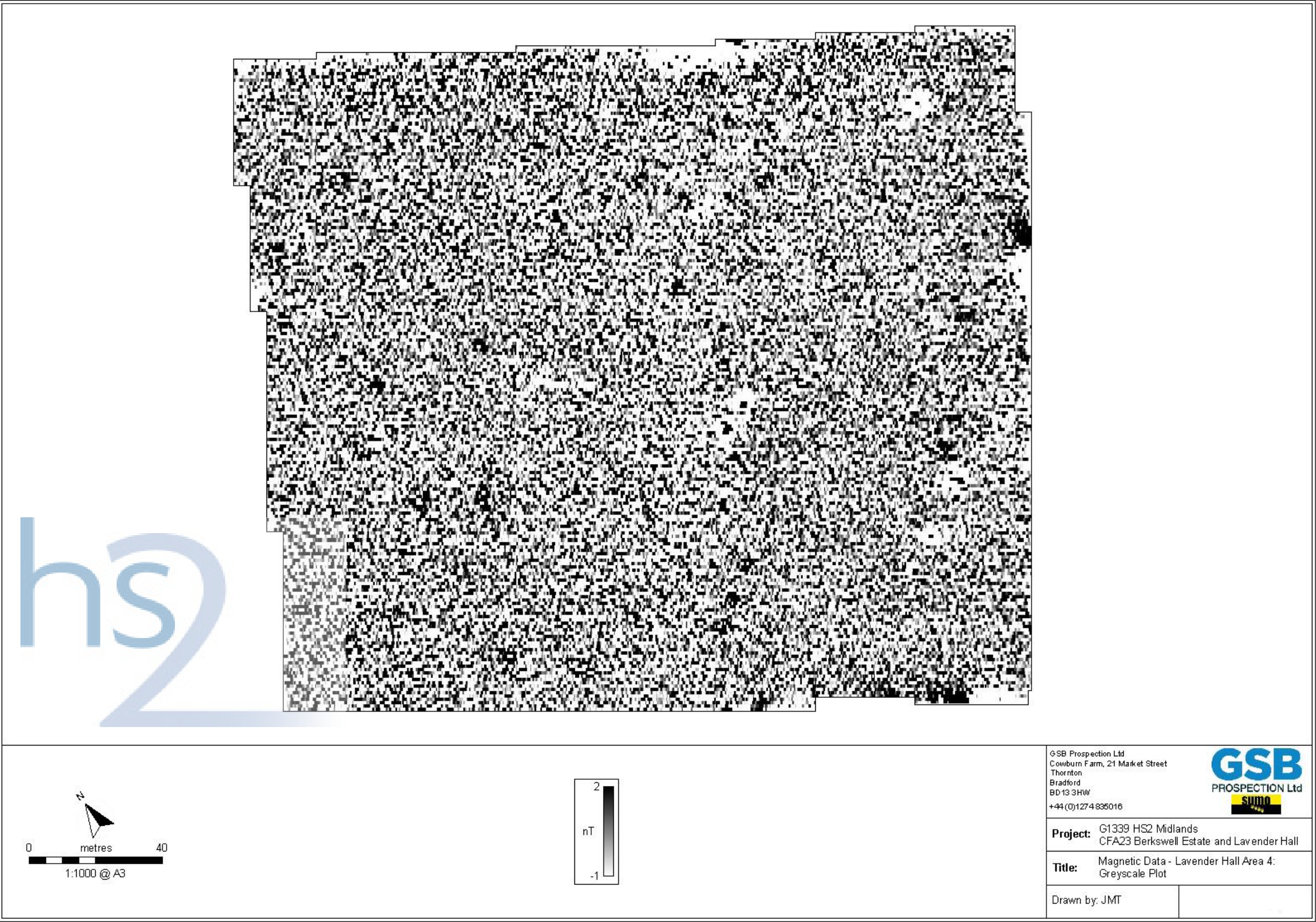


Figure 15: Geophysical survey - magnetic data - Lavender Hall area 4, greyscale plot



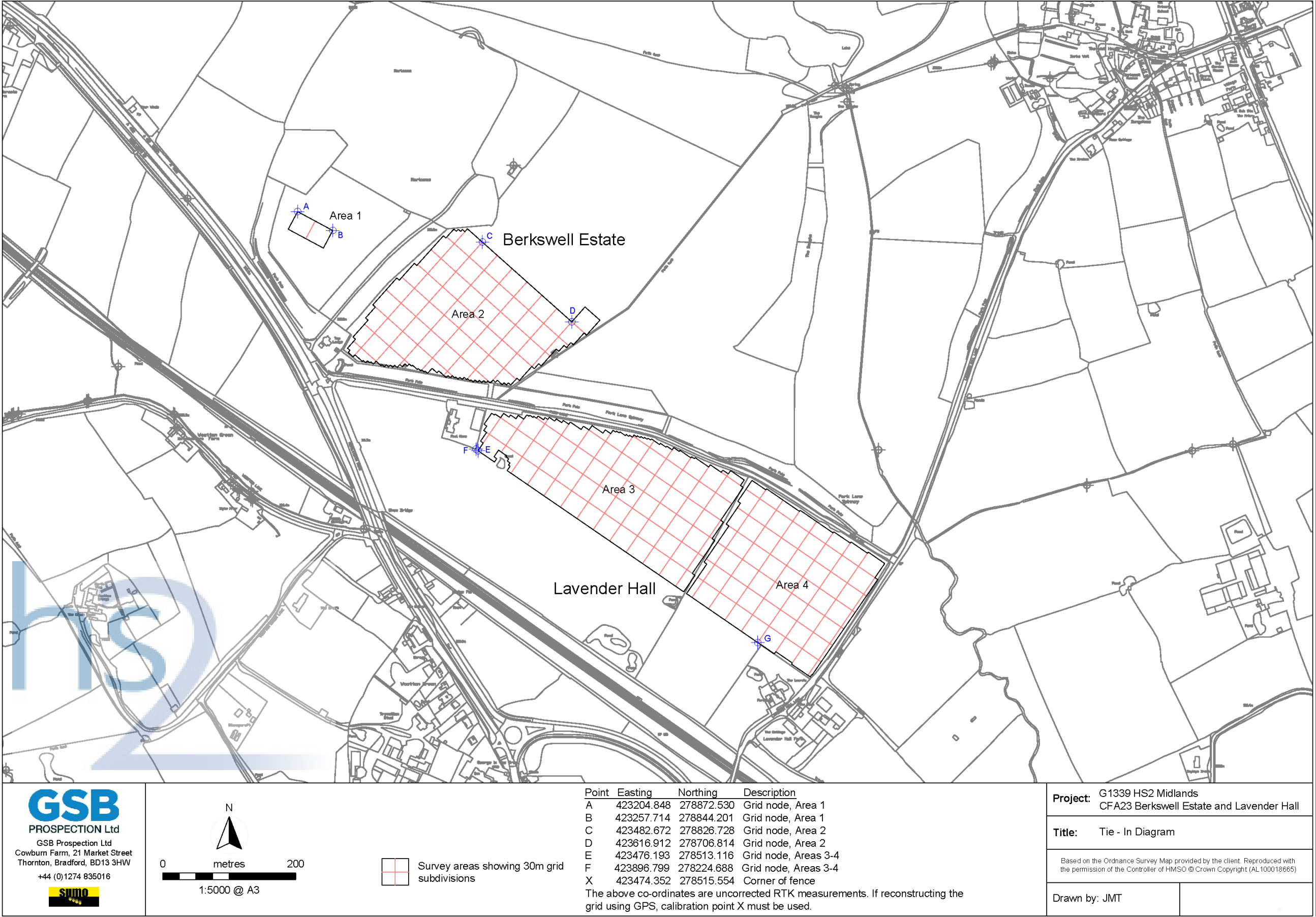


Figure 16: Geophysical survey - tie-in diagram

## 5 Aerial photographic survey report

### 5.1 Introduction

- 5.1.1 This report was prepared to support the assessment of cultural heritage assets that may be affected by the Proposed Scheme.
- 5.1.2 The object of this aerial photographic assessment was to provide information on the location, nature, condition and significance of archaeological sites and areas which are visible on aerial photographs within the study area (Figure 17). All periods of prehistory and history were considered during the assessment. The assessment identifies areas where aerial photographs are of assistance in assessing the heritage potential of a site or area and facilitates determination of areas where more detailed mapping and analysis may be appropriate at a future stage of investigation.
- 5.1.3 Historical aerial photographs also highlight the past heritage assets of an area such as this, where intensification of agriculture and modern development during the 20th and 21st centuries has eroded, partially obliterated or destroyed the remains of sites dating to previous periods.
- 5.1.4 All sites have been accurately located to a digital map base (Figure 18) to facilitate further investigation as appropriate.
- 5.1.5 The study area comprises c. 33km<sup>2</sup> of predominately open agricultural land interspersed with settlements.
- 5.1.6 The area is situated between National Grid Reference (NGR) SP 210 830 in the north, SP 258 743 in the south and centres upon SP 230 790. It lies between 80 and 130m Above Ordnance Datum (AOD).
- 5.1.7 The River Blythe and several other smaller watercourses run through the study area. The main settlements are situated at Hampton-in-Arden, Berkswell and Balsall Common and the area is traversed by the modern A 452 road and the Leicester to Birmingham railway line.
- 5.1.8 Some isolated parts of the study area, notably at Balsall Common, have been developed during the latter half of the 20th century, whilst other areas remain as pastoral and arable land with some areas of deciduous woodland.
- 5.1.9 Parts of the area have been used for sand and gravel extraction, which has left some artificial lakes within former extraction areas.

### Archaeology

- 5.1.10 The study area contains recorded heritage assets which date from the prehistoric and early medieval periods with medieval farming, settlement and evidence for moated sites in and just outside the study area. The alluvial floodplains of small watercourses and the River Blythe have also been drained and possibly used for water meadows, probably since the post medieval period. There is also some evidence for modern residential military use in two discrete areas.

- 5.1.11 The study area contains recorded heritage assets and findspots that date from the prehistoric periods. Sites Wo6 and W19 may date to the prehistoric or Romano-British periods, although this is not confirmed by aerial photographic evidence alone.
  - 5.1.12 A crop marked pit alignment (W19), some crop marked linear ditches and two ring ditches (Wo6) indicate possible prehistoric activity in the study area. These features were recorded from the air to the east and south-east of The Somers. There are also undated crop marked sites at two further locations, Wo8 and W37.
  - 5.1.13 A crop marked polygonal ditched enclosure, site W35, was photographed from the air and located inside the study area at The Somers, within Meriden Quarry. This feature was subsequently evaluated<sup>5</sup> and dated to the early medieval period.
  - 5.1.14 These features show or showed as crop marks, beneath somewhat extensive overlying ridge and furrow which indicates medieval agriculture in open fields around small settlements. These settlements are likely to lie beneath the modern villages. Whilst likely pre medieval crop marked features show at discreet locations in cereal crops or grass, they are by no means visible over the entirety of the area. This may be due to pastoral land use, or to the masking of underlying deposits by ridge and furrow.
  - 5.1.15 An 18th century ditched enclosure was recorded from the air in site W35 at Meriden Quarry. This feature was photographed from the air prior to its investigation and evaluation<sup>5</sup>.
  - 5.1.16 Where the land has been ploughed for cereal production, there is considerable erosion of formerly upstanding medieval ridge and furrow and these features often now show as marks in crops and grass.
- ### The role of aerial photographic interpretation
- 5.1.17 Air photo interpretation provides an overview of landscape history, development and changes in land use. It provides informed guidance for subsequent desk and ground-based investigations and complements cartographic and documentary research. In this case it has identified a series of sites and allowed their precise location to inform future appropriate mitigation strategies.
  - 5.1.18 Some information gained from aerial photographs cannot easily be detected by other means. Aerial photographs provide a chronologically documented and seasonal overview of a landscape and the sites and features within it. The interpretation of contemporary and archival aerial photography is thus an important component of multi-disciplinary archaeological investigation.
  - 5.1.19 Interpretation of aerial photographs allows the definition and in some cases the accurate mapping of archaeological sites or natural features recorded as crop, grass or vegetation marks (caused by the differential growth of plants over buried features), soil marks (caused by differences in soil colour over ploughed buried features), shadows cast by upstanding earthworks and features seen in relief, as well as the assessments of assets which have been destroyed since the time of photography.

<sup>5</sup> Griffin, S.; Jones, L.; Pearson, E. and Woodiwiss, S., (2000), *Evaluation at Meriden Quarry, Solihull*. Worcestershire County Council Archaeological Services Report

## Types

- 5.1.20 Two types of aerial photograph are used for archaeological interpretation. Vertical aerial photographs are taken for general-purpose survey using a camera mounted inside a modified aircraft. The aircraft is flown on a pre-planned set of overlapping flight-lines which cover the survey area completely. The camera points straight towards the ground. The vertical viewpoint provides aerial photographic coverage from a fixed scale and constant 180° angles at the centre of each frame. The overlap between the areas covered by each consecutive frame is usually 60%. This overlap between frames enables the photo interpreter to study each pair of vertical photos under a stereoscope.
- 5.1.21 The stereoscope combines the two images to allow the interpreter to see a single three-dimensional image of the ground surface. Vertical aerial photographs carry inherent distortions introduced by variations in perspective and ground height, but are essentially 'map-like' in appearance. They are generally taken for non-archaeological, civil and military purposes and form the basic data from which most modern maps are compiled. Vertical aerial photographs are a very useful source of archaeological data, particularly in areas such as this, where features survive as earthworks.
- 5.1.22 Oblique aerial photographs are taken using a hand held camera by an aerial archaeologist to portray features which have been identified during specialist survey. These photos are extremely useful, but contain inherent perspective distortions, which must be accounted for in rectification and mapping procedures. In this case, both vertical aerial photographs, and specialist obliques were available for interpretation. The sources of aerial photographs used for this assessment are detailed below.

### *English Heritage archive*

- 5.1.23 English Heritage, The Engine House, Fire Fly Avenue, Swindon. Air photo enquiry number 78288. This enquiry identified 293 vertical aerial photographs which were taken between 1946 and 1999.

### *Cambridge University collection of aerial photographs (CUCAP)*

- 5.1.24 Department of Geography, University of Cambridge. This collection contains oblique aerial photographs taken in 1960 and 1967 and vertical aerial photographs taken between 1985 and 2001, which were consulted in the CUCAP archive in Cambridge.

### *Online aerial images*

- 5.1.25 The ortho-rectified mosaics of vertical aerial photographs at Google Earth were consulted online for this assessment in June 2013 and included all available timelines from 1945 to 2011.

## 5.2 Methodology

- 5.2.1 All photographs were interpreted in accordance with the client's brief for works and the Institute for Archaeologists (IfA) Technical Paper 12<sup>6</sup> and the current accepted best practise in accordance with the standards adopted by the English Heritage (EH) National Mapping Programme (NMP).

- 5.2.2 The photographs were closely examined under 1.5x and 4x magnification and interpreted with the aid of a mirror stereoscope where appropriate, with the naked eye, or in detail on screen when consulted as digital files. All interpretations, which were derived from multiple aerial photographs, were transcribed to digital map bases as polygons and spot or sketched line data to locate and identify them and may be digitally rectified to an Ordnance Survey (OS) map base using AirPhoto 3.58 software at a future date, if appropriate, as part of any further works.
- 5.2.3 The printed map is presently scaled to fit the appropriate paper size (A3) for illustration and it outlines areas which were defined during the project. Any specific alignments, such as the direction of former and extant ridge and furrow, are indicated by conventional lines and arrows as employed by the EH NMP.
- 5.2.4 The mapping produced at this stage of the project is indicative of areas of potential and may be refined at a later date to produce detailed transcriptions as appropriate to the requirements of the project.
- 5.2.5 Mapping is also provided digitally for import to a Geographical Information System (GIS) in Drawing Exchange Format (DXF) release 12 files as a series of georeferenced digital layers.
- 5.2.6 GIS layers reflect the types and conditions of sites which were recorded. These layers are colour coded, which may be changed if necessary to the project requirements.

## 5.3 Limitations

- 5.3.1 It is important to note that aerial photographs usually only show part of the horizontal and vertical extent of buried and upstanding features. Their capacity to reveal features such as crop marks, vegetation marks, soil marks or as the shadows cast by banks, ditches and walls, depends upon a number of environmental and agricultural factors prevalent at the time of the photographic survey<sup>7 8</sup>.
- 5.3.2 Aerial photographic evidence is thus limited by seasonal, agricultural, meteorological, lighting and environmental factors, which affect the extent to which either buried or upstanding archaeological features and structures can be detected.
- 5.3.3 It is thus advantageous to examine a range of photos taken under a variety of environmental conditions in order to build up a comprehensive interpretation of the archaeological landscape. The visibility of archaeological features may differ from year to year and be obscured by differential depths of soil or differing types of vegetation and individual photographs can often record only a small percentage of the actual extent of buried or upstanding features.
- 5.3.4 These limitations are considered carefully whilst interpreting features from aerial photographs and interpretations are built up from observations of many photographs, if available, over a range of instances of photography.

<sup>6</sup> Palmer, R. and Cox, C., (1993), *Uses of Aerial photography in Archaeological Evaluations IfA Technical Paper 12*. IfA Reading.

<sup>7</sup> Riley, D.N.R., (1980), *Early Landscape from the Air*. Sheffield.

<sup>8</sup> Wilson, D. R., (1982 and 2000), *Air Photo Interpretation for Archaeologists*. London and 2nd Ed 2000. Stroud.



## 5.4 Assumptions

- 5.4.1 All archives have been carefully searched and consulted and it is assumed that all, or the majority of, available aerial photographs held at the archives have been consulted and used for this assessment.
- 5.4.2 Assumptions have been made regarding the limitations of the data as outlined above and any caveats on interpretations in the light of these limitations have been noted in the results section for each site.

## 5.5 Results

- 5.5.1 The study area was first photographed from the air by the Royal Air Force (RAF) between the 1940s and 1960s, after which it was photographed by several commercial survey companies and the Ordnance Survey (OS). Aerial archaeologist and former RAF pilot John Kenneth St Joseph also undertook some oblique aerial surveys in the study area in the 1960s and accessioned his photographs to the CUCAP archive of which he was then director.
- 5.5.2 Within the study area, 39 individual polygons were defined which contain or contained heritage assets which are visible on aerial photographs taken between 1945 and 2011.
- 5.5.3 These areas are illustrated on Figure 18 and summarised in Table 2.
- 5.5.4 The study area has shown potential for the presence of buried possible prehistoric or Romano-British sites, at Wo6 and W19 in the north of the area near The Somers at Meriden Quarry and undated crop marked sites at two further locations, Wo8 and W37.
- 5.5.5 There was a buried early medieval enclosure within the area of Meriden Quarry.
- 5.5.6 Medieval farming, settlement and evidence for moated sites are present in and just outside the study area.
- 5.5.7 The alluvial floodplains of small watercourses and the River Blythe have also been drained and possibly used for water meadows, probably since the post medieval period.
- 5.5.8 There was a buried 18th century enclosure within the area which is now Meriden Quarry, which was recorded from the air and subsequently dated by evaluation.
- 5.5.9 There is also some evidence for modern residential military use in two discrete areas.
- 5.5.10 These features show or showed as crop marks, beneath somewhat extensive overlying ridge and furrow, which indicates medieval agriculture in open fields around small settlements. These settlements are likely to lie beneath the modern villages. Whilst likely pre medieval crop marked features show at discreet locations in cereal crops or grass, they are by no means visible over the entirety of the area. This may be due to pastoral land use, or to the masking of underlying deposits by ridge and furrow.
- 5.5.11 Where the land has been ploughed for cereal production, there is considerable erosion of formerly upstanding medieval ridge and furrow and these features often now show as marks in crops and grass.

## 5.6 Description

- 5.6.1 Please see Table 2 for descriptions of the sites recorded with the study area.

Table 2: Aerial photographic survey - all sites recorded within study area

Unique identifier	AP Site	Site type	Period	NHER	NGR	Location	Present condition	Description	AP reference (s)
BHA112	W 01	Medieval fields	Medieval	NA	SP 225 781	Wootton Green	Eroded.	Eroded ridge and furrow, visible on aerial photographs up to 1991. The ridges are now only vestigially extant in the northern part of the site.  This site is of moderate significance.	Vertical  106G UK/1333  Frame 7060  RC8/IG226-7  KNCX159  KNCY184
BHA103	W 02	Medieval fields	Medieval	NA	SP 235 788	Marlowes	Eroded.	Eroded ridge and furrow.  This site is of moderate significance.	Vertical  106G UK/1333  Frame 7061  KNCX131
BHA043	W 03	Medieval fields around  grade II* listed building	Medieval	Grade II* listed building [1045806] NHER [333805] NMR SP27NW11	SP 245 783	Ram Hall and Lavender Hall	Eroded, some extant.	Eroded ridge and furrow, with some extant adjacent to Ram Hall and Lavender Hall.  This site is of high significance.	Vertical  106G UK/1333  Frame 7060-1  Vertical  CPE UK/2456, 3356
BHA062	W 04	Medieval fields	Medieval	NA	SP 235 783	Skew Bridge	Eroded.	Eroded ridge and furrow.  This site is of moderate significance.	Vertical  106G UK/1333  Frame 7060-62
BHA060	W 05	Medieval fields	Medieval	NA	SP 249 797	Berkswell	Eroded.	Eroded ridge and furrow visible as faint crop and grass marks on the 2010 timeline at Google Earth.  This site is of moderate significance.	Vertical  106G UK/1333  Frame 7060-621, Google Earth 2010  KNCX107+9
BHA152	W 06	Ring ditch and linear ditches	Possibly prehistoric and/or Roman	NA	SP 225 817	Cornets End	Eroded but will likely be extant features in sub soil.	Eroded ring ditch which shows as a mark in crops alongside extensive linear ditches. These buried features are eroded, but will still be residually present in the top and sub soils. The ring ditch may be a buried eroded Bronze Age round barrow (burial mound) although this is not currently proven. It lies close to a crop marked pit alignment  (W 19). Google Earth shows another possible sub circular feature in this field which may be a second possible eroded barrow, in one year only under a ripe cereal crop.  This site is of high significance.	Obliques  ABG 42 and 43

Unique identifier	AP Site	Site type	Period	NHER	NGR	Location	Present condition	Description	AP reference (s)
BHA162	W 07	Medieval fields and possible moat which is not visible on aerial photographs	Medieval	NA  Possible moat NHER [333816]  NMR SP27NW14	SP 200 810	Hampton-in-Arden	Largely extant.	Upstanding ridge and furrow visible to 1991 and visible as extant features on the 2011 timeline at Google Earth. A possible moat referred to on the NHER is not visible on aerial photographs.  This site is of moderate significance.	Vertical  106G UK/1333  Frame 5056  CPE UK/ 2469  RC8/ID278-9  KNCX254  Google Earth 2011
BHA153	W 08	Medieval fields and buried cut features	Undated and medieval	NA	SP 202 799	Hook End	Eroded but likely will be extant cut features in the sub soil.	Buried cut features and large cut area features, of unknown origin, which show as crop marks at the 2011 timeline on Google Earth. Also eroded ridge and furrow.  This site is of moderate significance.	Vertical  106G UK/1333  Frame 5056  CPE UK/ 2469  RC8/ID278-9  RC8/IE87-8  Google Earth 2011.
BHA183	W 09	Medieval fields	Medieval	NA	SP 206 816	Hampton-in-Arden	Eroded.	Eroded ridge and furrow.  This site is of moderate significance.	Vertical  106G UK/1333  Frame 5056  CPE UK/ 2469  RC8/ID278-9  RC8/IE87-8
BHA006	W 10	Medieval fields	Medieval	NA	SP 261 775	Carol Green	Extant.	Upstanding ridge and furrow.  This site is of moderate significance.	3G TUD UK 9 Pt1 5107
BHA168	W 11	Military	Modern	NA	SP 210 810	Hampton-in-Arden	Destroyed.	Possible military encampments.  This site is of no, or very low, significance.	Vertical  106G UK/1333  Frame 5056 – 57  RC8/ID278-9.
BHA148	W 12	Ridge and furrow and drains or water meadows.	Medieval and post medieval	NA	SP 213 803	Hampton-in-Arden	Eroded but vestigially extant.	Remains of field drainage system or possible water meadows.  This site is of moderate significance.	Vertical  106G UK/1333  Frame 5057

Unique identifier	AP Site	Site type	Period	NHER	NGR	Location	Present condition	Description	AP reference (s)
BHA138	W 13	Drains or water meadows	Post medieval	NA	SP 213 798	Windmill Farm	Eroded but vestigially extant.	Possible drainage or water meadow system.  This site is of moderate significance.	Vertical  106G UK/1333  Frame 5057  RC8/IG229-30,232-3
BHA128	W 14	Medieval fields	Medieval	NA	SP 220 797	Arden House	Eroded and partially destroyed.	Eroded ridge and furrow visible over parts of the area which have not been extracted for gravel.  This site is of moderate significance.	Vertical  106G UK/1333  Frame 5057  RC8/IG229-30,232-3
BHA134	W 15	Drains or water meadows	Post medieval	NA	SP 228 815	Cornets End Lane	Eroded and partially destroyed.	Drainage or possible water meadow system.  Adjacent to sand and gravel extraction area.  This site is of moderate significance.	Vertical  106G UK/1333  Frame 5060  RC8/ID253-4,274-5  KNCX166
BHA140	W 16	Drains and former boundaries	Post medieval	NA	SP 226 809	Horn Brook Farm	Eroded.	Former drains/field boundary system.  This site is of moderate significance.	Vertical  106G UK/1333  Frame 5060  RC8/ID253-4,274-5  KNCX166
BHA116	W 17	Medieval and possible post medieval fields	Medieval and possibly post medieval	NA	SP 234 645	Cornets End	Eroded.	Eroded ridge and furrow, possible traces of steam ploughing visible 1985 but eroded by 2011.  This site is of moderate significance.	Vertical  106G UK/1333  Frame 5060  RC8/IE80-82, 197-8  KNCX75,77,79+,107,109
BHA035	W 18	Medieval fields	Medieval	NA	SP 240 775	Balsall Common	Eroded.	Eroded ridge and furrow.  This site is of moderate significance.	Vertical  CPE UK/3319  RC8/IG115-7, 282-3  KNCX158
BHA160	W 19	Pit alignment	Possibly prehistoric	NA	SP 226 189	Warwickshire Golf Club	Eroded and buried. May be destroyed or possibly preserved in situ in the subsoil by re development as a golf course.	A linear boundary comprising of a row of buried eroded pits shows as marks in crops. This area is now re developed as a golf course, but some possible traces of this feature may possibly be present in the sub soil in this area. These features may be linked to W o6 to the immediate south.  This site is of high significance.	Oblique XL 73, 75 and 76
BHA166	W 20	Drains and possible water meadows	Post medieval	NA	SP 213 815	Meriden Road	Eroded but vestigially extant.	Traces of drains which may be indicative of earlier water meadows.  This site is of moderate significance.	Vertical 541 213 3139

Unique identifier	AP Site	Site type	Period	NHER	NGR	Location	Present condition	Description	AP reference (s)
BHA048	W 21	Medieval fields	Medieval	NA	SP 231 772	Balsall Common	Eroded.	Eroded ridge and furrow which is mainly ploughed out or overbuilt by 2010.  Part of the site under open ground is of moderate significance.  Part built over is of no, or very low, significance.	Vertical  CPE UK/2456, 3318  RC8/IG119-20
BHA011	W 22	Medieval fields	Medieval	NA	SP 245 769	East of Balsall Common	Eroded.	Eroded ridge and furrow.  This site is of moderate significance.	Vertical  CPE UK/3319  RC8/IG115-7, 282-3  KNCX158
BHA007	W 23	Medieval fields	Medieval	NA	SP 253 761	Pool House Farm	Eroded.	Ridge and furrow and some ditches which may be modern farm access ways.  This site is of moderate significance.	Vertical  CPE UK/2456, 4320-1  RC8/IF274-5, 282-3  RC8/IG 6-8  KNCX87
BHA009	W 24	Medieval fields	Medieval	NA	SP 255 775	Truggist Hill Farm	Eroded.	Eroded ridge and furrow.  This site is of moderate significance.	Vertical  CPE UK/3319  RC8/IG115-7, 282-3  KNCX158
BHA016	W 25	Medieval fields	Medieval	NA	SP 250 771	Beechwood	Eroded.	Eroded ridge and furrow.  This site is of moderate significance.	Vertical  CPE UK/3319  RC8/IG115-7, 282-3  KNCX158
BHA005	W 26	Military structures	Modern	NA	SP 268 777	Reeves Green	Destroyed.	Possible temporary houses or military structure. Also visible ridge and furrow within this area.  This site is of no, or very low, significance.	3G TUD UK9 Pt1 5103-5.
BHA004	W 27	Medieval fields	Medieval	NA	SP 264 778	Reeves Green	Eroded.	Eroded ridge and furrow.  This site is of moderate significance.	3G TUD UK9 Pt1 5103-5.
BHA050	W 28	Medieval fields	Medieval	NA	SP 231 763	Balsall Common	Eroded.	Eroded ridge and furrow, not visible after 1991.  This site is of moderate significance.	Vertical  CPE UK/2456, 3383  KNCX156
BHA227	W 29	Medieval fields	Medieval	NA	SP 196 820	North of Hampton-in-Arden	Eroded.	Eroded ridge and furrow.  This site is of moderate significance.	CM 92 104 056  RC8/ID246-7



Unique identifier	AP Site	Site type	Period	NHER	NGR	Location	Present condition	Description	AP reference (s)
BHA019	W 30	Medieval fields around moat and grade II* listed building	Medieval	Grade II* listed building [333720] NHER [1075940] NMR SP27NE1	SP 253 777	Moat House Farm	Eroded ridge and furrow, moat under vegetation.	Eroded ridge and furrow centred on a moat.  This site is of high significance.	Vertical  CPE UK/2456, 3388  Vertical  CPE UK/3319  RC8/IG115-7, 282-3  KNCX158
BHA015	W 31	Medieval fields	Medieval	NA	SP 263 784	Victoria Farm	Eroded.	Eroded ridge and furrow.  This site is of moderate significance.	Vertical  CPE UK/2456, 3389
BHA012	W 32	Medieval fields	Medieval	NA	SP 259 779	Reeves Green Farm	Eroded.	Eroded ridge and furrow.  This site is of moderate significance.	Vertical  CPE UK/2456, 3419
BHA034	W 33	Possible moat or boundary	Medieval	NA	SP 248 779	Moat House Farm	Eroded.	Curvilinear feature, possible boundary or could be a much eroded moat, although this is only a possibility, not a definite interpretation.  This site is of moderate significance.	Vertical  CPE UK/2456, 3420
BHA001	W 34	Medieval and possible post medieval fields	Medieval and possible post medieval	NA	SP 255 752	Black Heyes Farm	Eroded.	Eroded ridge and furrow, visible to 1987 with possible evidence of additional steam ploughing.  This site is of moderate significance.	Vertical  CPE UK/2456, 4320-1  RC8/IF274-5, 282-3  RC8/IG 6-8  KNCX87
BHA154	W 35	Polygonal ditched enclosure  Medieval fields  Double ditched enclosure	Early medieval  Medieval  18th century (post medieval)	NA Archaeology Data Service (ADS) site code WM4015  NMR Excavation index Event code [1380112]	SP 231 823	Meriden Quarry	Destroyed by sand and gravel extraction.	These features, which were visible as crop marks on aerial photographs prior to their destruction, were the buried crop marked remains of a polygonal ditched early medieval enclosure, medieval ridge and furrow and an 18th century double ditched enclosure.  These features were excavated by the West Midlands SMR in 1987 (Lang 1988) and evaluated by Worcestershire County Council Archaeology Service(Griffin et al, 2000) in advance of sand and gravel extraction.  Destroyed ridge and furrow.  This site is of no, or very low, significance.	Obliques ABG 44 and 45  Former ridge and furrow visible on  Verticals  CPE UK/2456, 4376-7
BHA169	W 36	Medieval fields around grade II* listed building	Medieval and post medieval	Grade II* listed building [105738] NHER [334187] NMR SP28SW12	SP 213 825	Diddington Hall	Eroded and vestigially extant features.	Ridge and furrow and earthworks, possible former garden, at Diddington Hall. Faint traces of ridge and furrow visible until 1985.  This site is of high significance.	RC8/ID147-8, 250-1
BHA122	W 37	Cut features	Unknown	NA	SP 222 785	Brooklands Farm	Eroded and buried.	Possible cut features which show as marks in crops.  This site is of moderate significance.	Google Earth, 2011
BHA040	W 38	Medieval fields	Medieval	NA	SP 253 786	Benton Green	Extant.	Upstanding ridge and furrow.  This site is of moderate significance.	Google Earth 2010
BHA226	W 39	Medieval fields	Medieval	NA	SP 201 826	Diddington Hill	Eroded.	Eroded ridge and furrow.  This site is of moderate significance.	Google Earth 2009 and 2010

## 5.7 Interpretation

### Prehistoric periods

- 5.7.1 Site W19 contains a buried pit alignment, beneath a modern golf course. These features may be prehistoric or Romano-British.
- 5.7.2 Wo6 contains buried crop marked evidence for one or possibly two, eroded ring ditches and other ditches, which could be residual Bronze Age round barrows (burial mounds).
- 5.7.3 These sites are likely to be prehistoric, possibly the remains of Bronze Age burial mounds at W06 and an undated possibly prehistoric boundary at W19.
- 5.7.4 Crop marked linear features at Wo6 are an extensive system of straight buried ditches with one rounded corner. They are now partially underneath a modern golf course, but their exact nature and positions may be mapped from aerial photographs should this be required at a future stage of the project. The majority of the visible features lie within an agricultural ploughed field.
- 5.7.5 Features within Wo6 were overlain by medieval ridge and furrow, which is now also eroded and shows only as crop marks on a few occasions of photography.

### Romano-British periods

- 5.7.6 There is no direct visible evidence on aerial photographs for Romano-British or Roman military sites within the study area. Crop marked sites at Wo6 and W19 may possibly have Romano-British elements, but these are as yet undated.
- 5.7.7 A straight-sided double ditched enclosure which was visible as crop marks within the area which is now Meriden Quarry at W35. This feature was originally considered to be a possible Roman military site<sup>9</sup>, but is an 18th century enclosure<sup>10</sup> and does not date to the Romano-British period.

### Early medieval period

- 5.7.8 A polygonal ditched enclosure, visible on aerial photographs as a crop marked site, lay within the area which is now Meriden Quarry. Evaluation dated this feature to the early medieval period<sup>10</sup>.

### Medieval period

- 5.7.9 The study area contained widespread evidence for the presence of eroded and some upstanding medieval ridge and furrow which indicated areas which lay in the outfields to medieval settlements. These former field systems are associated with some moated sites which are extant or eroded within and outside of the study area as would be expected in a medieval and post medieval pastoral area.

### Post-medieval period

- 5.7.10 There is evidence for some drains and possibly vestigial water meadows within the alluvial floodplains of watercourses within the study area and some possible steam ploughing indicative of post medieval agricultural use.

### Modern period

- 5.7.11 There are two discreet areas, W11 and W26, where structures were observed in the 1940s and 1950s which have now been removed. They were likely to have been military residential encampments or similar temporary areas.

### Undated features

- 5.7.12 Two areas at Wo8 and W37 show evidence for undated fragmentary buried features as crop marks. These features may be part of a buried pre modern landscape and are likely to be more extensive both horizontally and vertically than shown by the few aerial photographs which record them.

## 5.8 Conclusion

- 5.8.1 Aerial photographs taken between 1945 and 2011 show that large parts of the study area were used for farming in the medieval period, as they are today.
- 5.8.2 Some parts of the study area between Hampton-in-Arden and Meriden have been used for sand and gravel extraction and modern golf courses.
- 5.8.3 There is evidence for some possible prehistoric and/or Romano-British activity in the north part of the study area. This is shown by crop marked sites at Wo6 and W19.
- 5.8.4 An early medieval enclosure and 18th century enclosure lay within the area which is now Meriden Quarry at W35.
- 5.8.5 There are some indications of possible crop marked evidence for undated human activity at Wo8 and W37.
- 5.8.6 This evidence is likely to be present over an unknown proportion of the area, but is not visible on current and historic aerial photographs. This is due to either unsuitable environmental conditions, lack of systematic aerial survey or, more likely, by the masking of evidence by overlying medieval and post medieval agricultural features.
- 5.8.7 Statutorily protected buildings such as Ram Hall, Lavender Hall and Diddington Hall, and moated sites, are set within some areas of medieval fields which are less eroded and are recorded here as sites of higher significance due to the association of the field systems with a known building or structure within its landscape setting. These assessments of significance may change in accordance with further investigations or project requirements at a future date and are indicative of the results of aerial photographic evidence alone.
- 5.8.8 There is evidence for water management in the floodplains of the River Blythe and along smaller watercourses.
- 5.8.9 Further detailed mapping may be undertaken from historical and contemporary aerial photographs, if necessary to the requirements of any future ground works, to locate specific features if required at sites Wo6 and W19. Details of drains and possible water meadow

<sup>9</sup> Lang, N., (1988), *The Somers, Meriden: Trial Excavation*. West Midlands Archaeology CBA Regional Group 8 32/1989 104-105.

<sup>10</sup> Griffin, S.; Jones, L.; Pearson, E. and Woodiwiss, S., (2000), *Evaluation at Meriden Quarry, Solihull*. Worcestershire County Council Archaeological Services Report.

- features at W12, W13, W15, W16 and W20 may be mapped if required from historical aerial photographs where they may remain and in areas which are still under open ground.
- 5.8.10 Figure 19 indicates the significance of the sites identified from aerial photographs in terms of their current preservation and potential for preservation of archaeological deposits and/or other heritage assets and their potential heritage importance.
- 5.8.11 Assessment of significance has been based on the condition and preservation of the recorded features as evidenced by aerial photographs, with consideration where appropriate for their statutory status if any and the interpreted site type based on their morphology and situation.
- 5.8.12 Alterations to the significance of individual sites or areas may be appropriate in the light of the findings of the wider heritage assessment during the scoping process and any required non-intrusive or intrusive assessments and evaluations which may be appropriate in the future.
- 5.8.13 Three extant areas of ridge and furrow, sites W03, W30 and W36, lie within the setting of a statutorily protected moat or building. Sites W06 and W19 are morphologically identifiable crop marked sites, which are likely to comprise part of a buried prehistoric or Romano-British landscape. Due to their locations, these sites are of high significance.
- 5.8.14 Sites W01, W02, W04, W05, W07–10, W12–18, W20, W22–25, W27–29, W31–34 and W37–39 are still under open ground, or partially under open ground. They are largely eroded by modern agriculture, are not associated with any statutorily designated landscape or structure and are not infrequently found examples of buried sites. However, the features may be residually present in the top or sub soils and also may seal and preserve underlying features, which are not visible to date as marks in crops or vegetation. These sites carry moderate significance for the preservation of buried deposits or extant features, which may comprise parts of the relict past landscape, or slight upstanding remains of earthworks which comprise former features in the medieval or post medieval landscape that is extensive over this study area.
- 5.8.15 Sites W11, W26, W35 and parts of W21, are no longer extant, or are severely truncated, but are preserved by record via historic aerial photographs and, in one case, a report on an archaeological investigation. However, they carry no heritage significance beyond their contribution to the appreciation of the extent of the past landscape in this area.

5.9 References

5.9.1 1st Edition Ordnance Survey maps

5.9.2 Griffin, S.; Jones, L.; Pearson, E. and Woodiwiss, S., (2000), Evaluation at Meriden Quarry, Solihull. Worcestershire County Council Archaeological Services Report.

5.9.3 Lang, N., (1988), The Somers, Meriden: Trial Excavation. West Midlands Archaeology CBA Regional Group 8 32/1989 104-105.

5.9.4 National Heritage Environment Record (NHER) and former National Monuments Record (NMR).

5.9.5 Palmer, R. and Cox, C., (1993), Uses of Aerial photography in Archaeological Evaluations IfA Technical Paper 12. IfA Reading.

5.9.6 Riley, D.N.R., (1980), Early Landscape from the Air. Sheffield.

5.9.7 Soil Survey of England and Wales, Sheet 3 Midland and Western England 1:250000 scale.

5.9.8 Wilson, D. R., (1982 and 2000), Air Photo Interpretation for Archaeologists London and 2nd Ed 2000. Stroud.

5.10 Figures





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Client Ove Arup & Partners Ltd.  
Date 23 06 2013  
Scale As marked, for information only  
Air Photo Services Ltd. [www.airphotoservices.co.uk](http://www.airphotoservices.co.uk)

Legend

Study area



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Legend

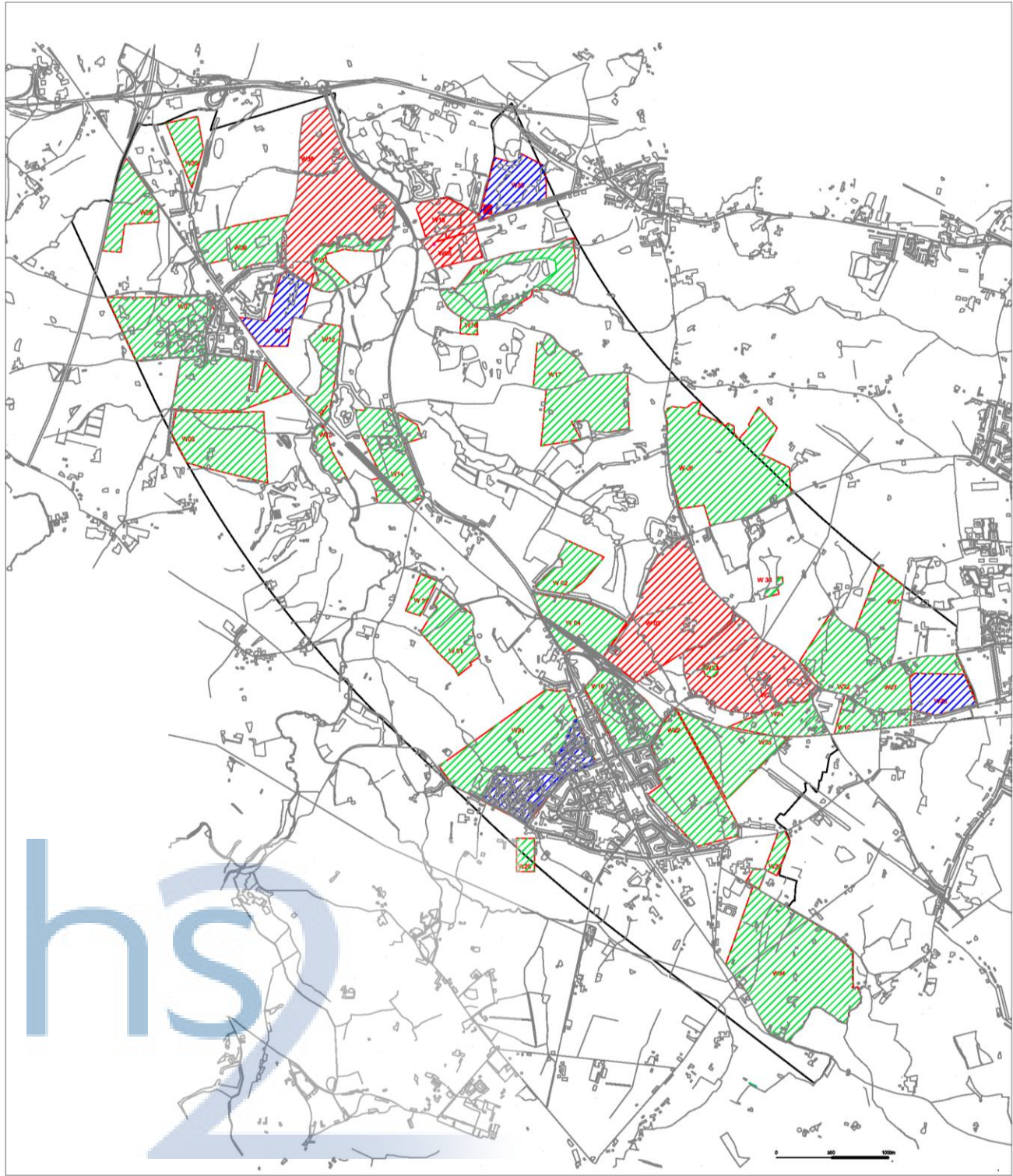
Study area  
AP Site  
Eroded ridge and furrow  
Destroyed ridge and furrow  
Extant ridge and furrow



Figure 17: Aerial photographic survey - study area

Figure 18: Aerial photographic survey - sites recorded from aerial photographs





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**Legend**

Study area ———

AP Site ———

Area of low or no significance where features are likely to be destroyed

Area of moderate significance where features may be extant

Area of high significance where features are extant

Figure 19: Aerial photographic survey - significance of sites recorded from aerial photographs